SECTION 2.0

Proposed Action and Alternatives

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 Proposed Action

2.1.1 Site Location

The Proposed Action consists of two primary components, a solar energy facility and electrical transmission lines, which are located on distinct sites: 1) the Imperial Solar Energy Center West Solar Energy facility property is located on private lands under the jurisdiction of the County of Imperial; and, 2) the proposed electrical transmission lines which would connect from the solar energy facility to the existing Imperial Valley Substation are located within the California Desert Conservation Area under the jurisdiction of the Federal Bureau of Land Management.

2.1.1.1 Imperial Solar Energy Center West Solar Energy Facility

The site of the proposed solar energy facility is located on 1,130 acres of privately-owned land, previously utilized for agricultural production. The site is located in the unincorporated Seeley area of the County of Imperial, approximately eight miles west of the City of El Centro. Imperial County is located in Southern California, bordering Mexico, west of Arizona, and east of San Diego County. Figure 2-1 depicts the regional location of the property.

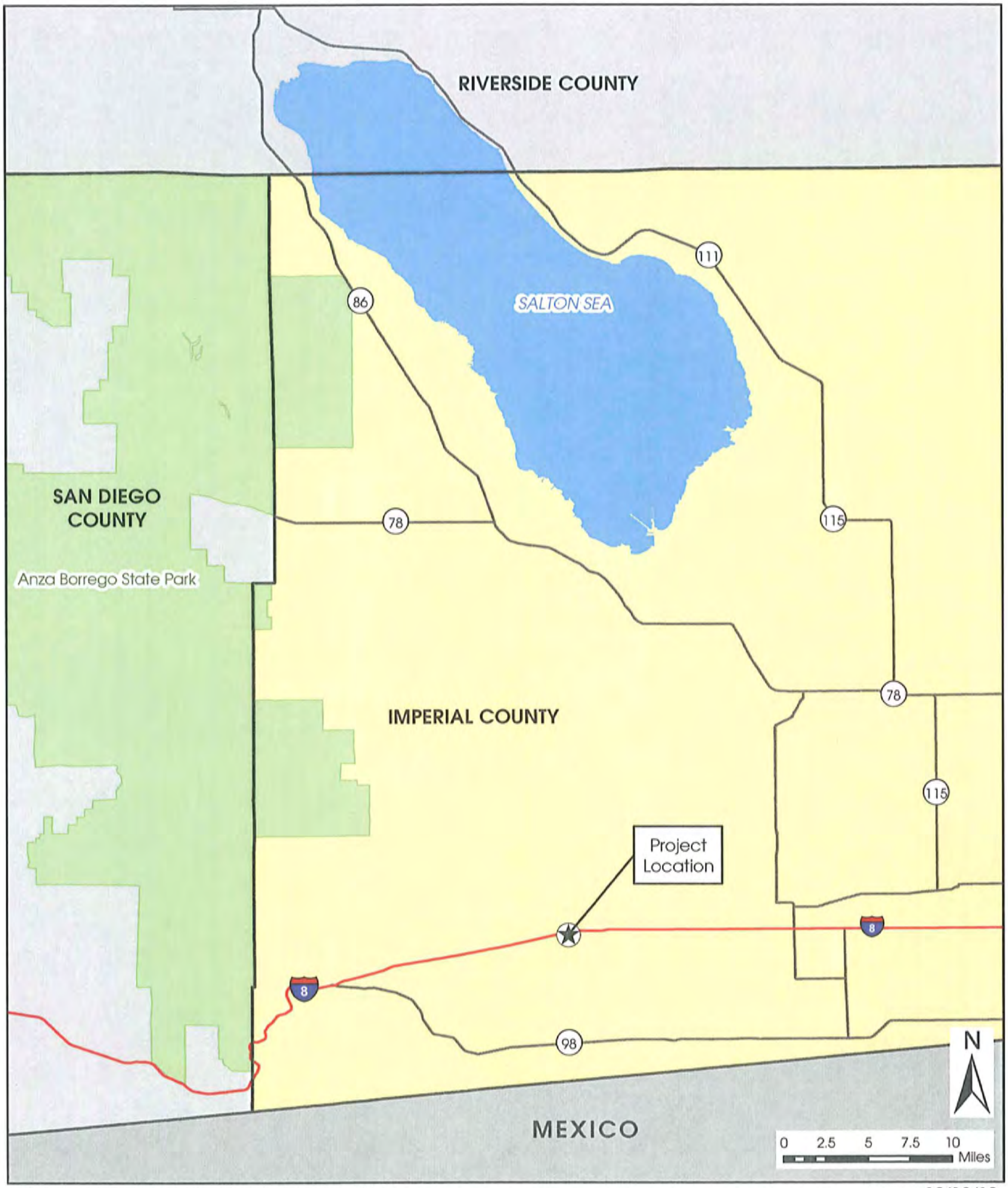
The solar energy facility property is located east of Dunaway Road, west of the Westside Main Canal, south of Evan Hewes Highway and north of BLM lands. The site is bisected by Interstate 8. This portion of the project site consists of nine privately-owned parcels: Assessor Parcel Numbers (APN): 051-290-001; 051-290-003; 051-260-025; 051-260-026; 034-360-075; 034-360-076; 034-360-077; 034-360-078; and, 051-010-007. Figure 2-2 depicts the solar energy facility site in context of the local vicinity.

The solar energy facility site is located immediately outside of the western fringe of developed agricultural lands in the County. Federal lands under jurisdiction of the Bureau of Land Management (BLM) are located immediately west and south of the site. More specifically, this adjacent BLM land is designated as Utility Corridor “N” within the Yuha Desert, in the BLM’s California Desert Conservation Area Plan. Agricultural lands are located north and east of the solar energy facility site. Figure 2-3 provides an aerial photograph of the solar energy facility site and immediately surrounding area.

The solar energy facility property is designated by the County of Imperial General Plan as “Agriculture” and is zoned A-2 (General Agriculture), A-2-R (General Agricultural Rural Zone), and A-3 (Heavy Agriculture). The site has been previously used for agricultural production, but is currently fallow. The site is not subject to California Land Conservation Act of 1965 (“Williamson Act”) contracts.

2.1.1.2 Electrical Transmission Line Corridor

The proposed solar energy facility site is located approximately five miles northwest of the existing Imperial Valley Substation. As part of the Proposed Action, the solar energy facility would interconnect to the utility grid at the 230 kV side of the Imperial Valley Substation via an approximately five-mile long transmission line. The proposed right-of-way (ROW) for the electrical transmission line corridor would be 120-feet wide, and



SOURCE: ESRI, 2008; BRG Consulting, Inc., 2010

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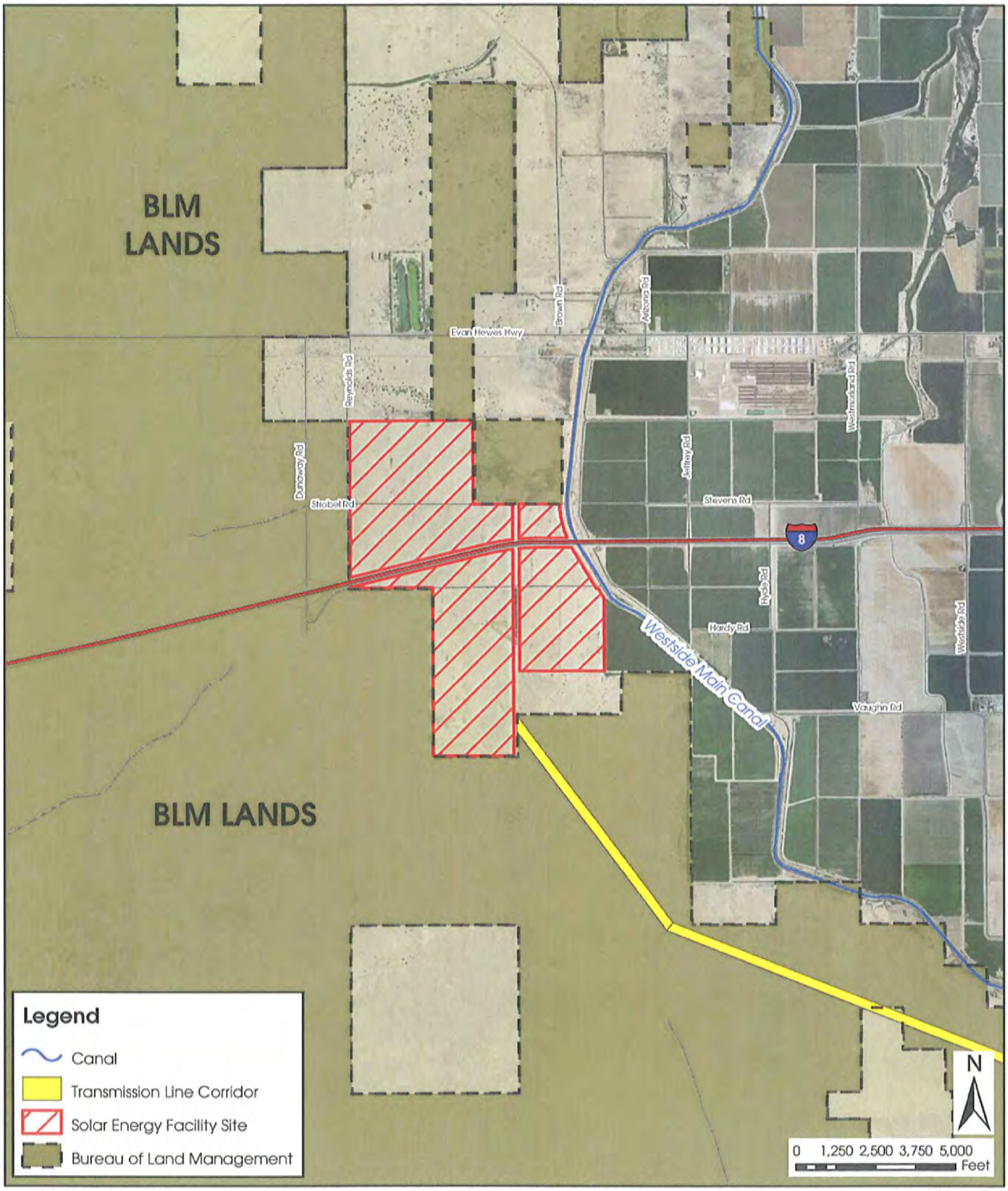
Regional Location

FIGURE 2-1

F:\projects\1008 Imperial Solar West\2nd Screencheck EIR_EA\Chapter 2\Figure 2-1 Regional Location.mxd



SOURCE: Bureau of Land Management, 2009; ESRI, 2010; BRG Consulting, Inc., 2010

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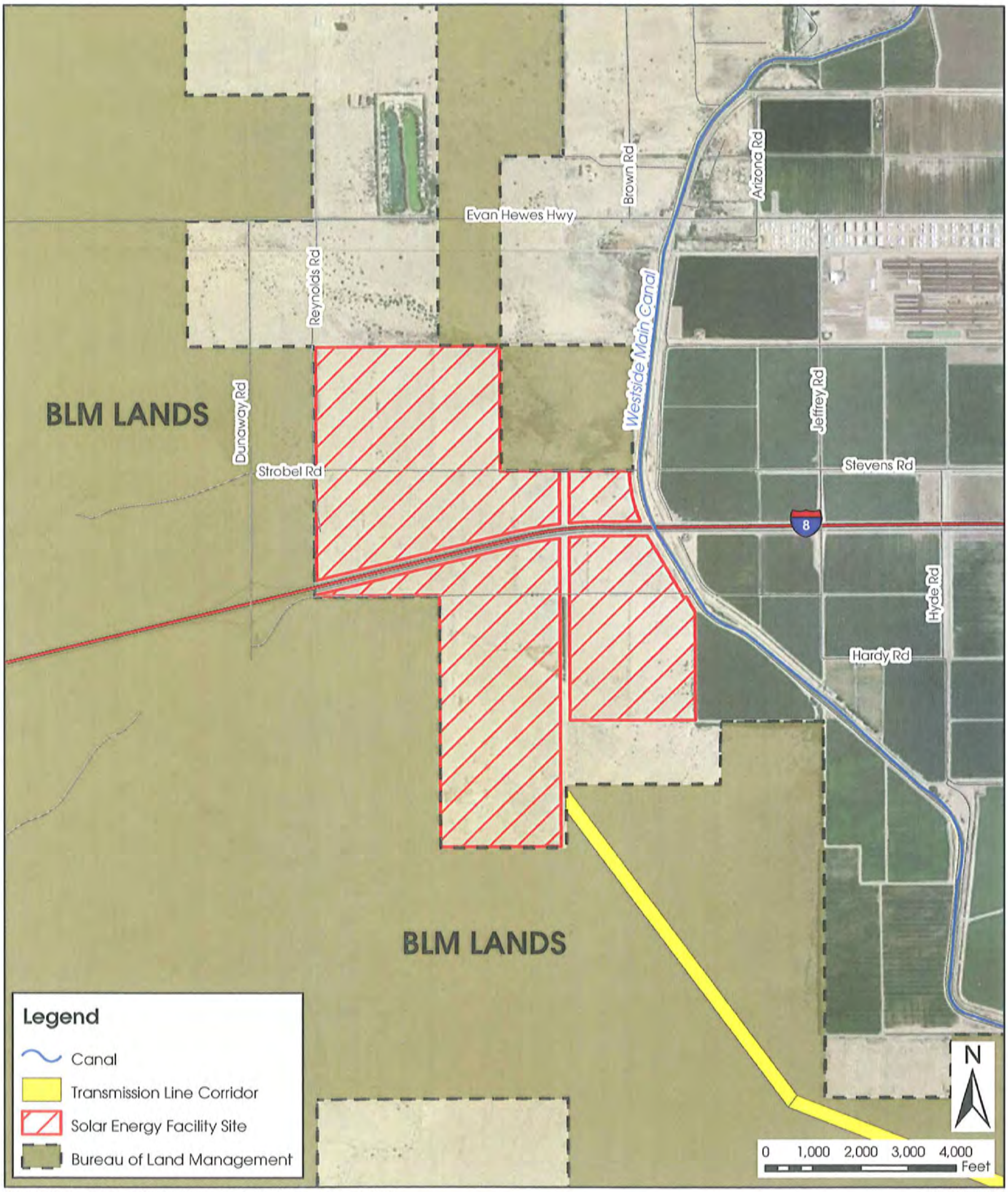
Local Vicinity

FIGURE 2-2

F:\projects\1008 Imperial Solar West\2nd Screencheck EIR_EA\Chapter 2\Figure 2-2 Local Vicinity.mxd



SOURCE: ESRI, 2008; BRG Consulting, Inc., 2010

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Aerial Photo of Solar Energy Facility Site

FIGURE 2-3

F:\projects\1008 Imperial Solar West\2nd Screencheck EIR_EA\Chapter 2\Figure 2-3 Aerial Photo.mxd would be located within Utility Corridor "N" of the BLM's California Desert Conservation Area Plan. Figure 2-4 depicts Utility Corridor "N." Figure 2-5 depicts the alignment of the proposed transmission line corridor on an aerial photograph and its context as it relates to Utility Corridor "N" and BLM lands.

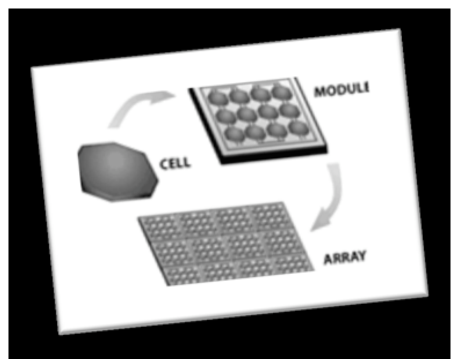
2.1.2 Project Characteristics

The Proposed Action consists of two primary components: 1) the construction and operation of the 250 megawatt Imperial Solar Energy Center West Solar Energy facility; and, 2) the construction and operation of the electrical transmission lines and associated towers. The following provides a description of the solar energy electrical generating process and proposed solar technology/system.

2.1.2.1 Solar Energy Facility Description

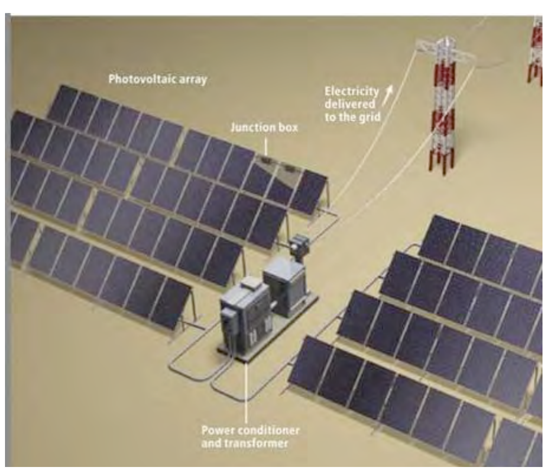
The electricity generation process associated with the Proposed Action would utilize solar technology to convert sunlight directly into electricity. The proposed solar technology is consistent with the definition of an "eligible renewable energy resource" in Section 399.12 of the California Public Utilities Code and the definition of "in-state renewable electricity generation facility" in Section 25741 of the California Public Resources Code.

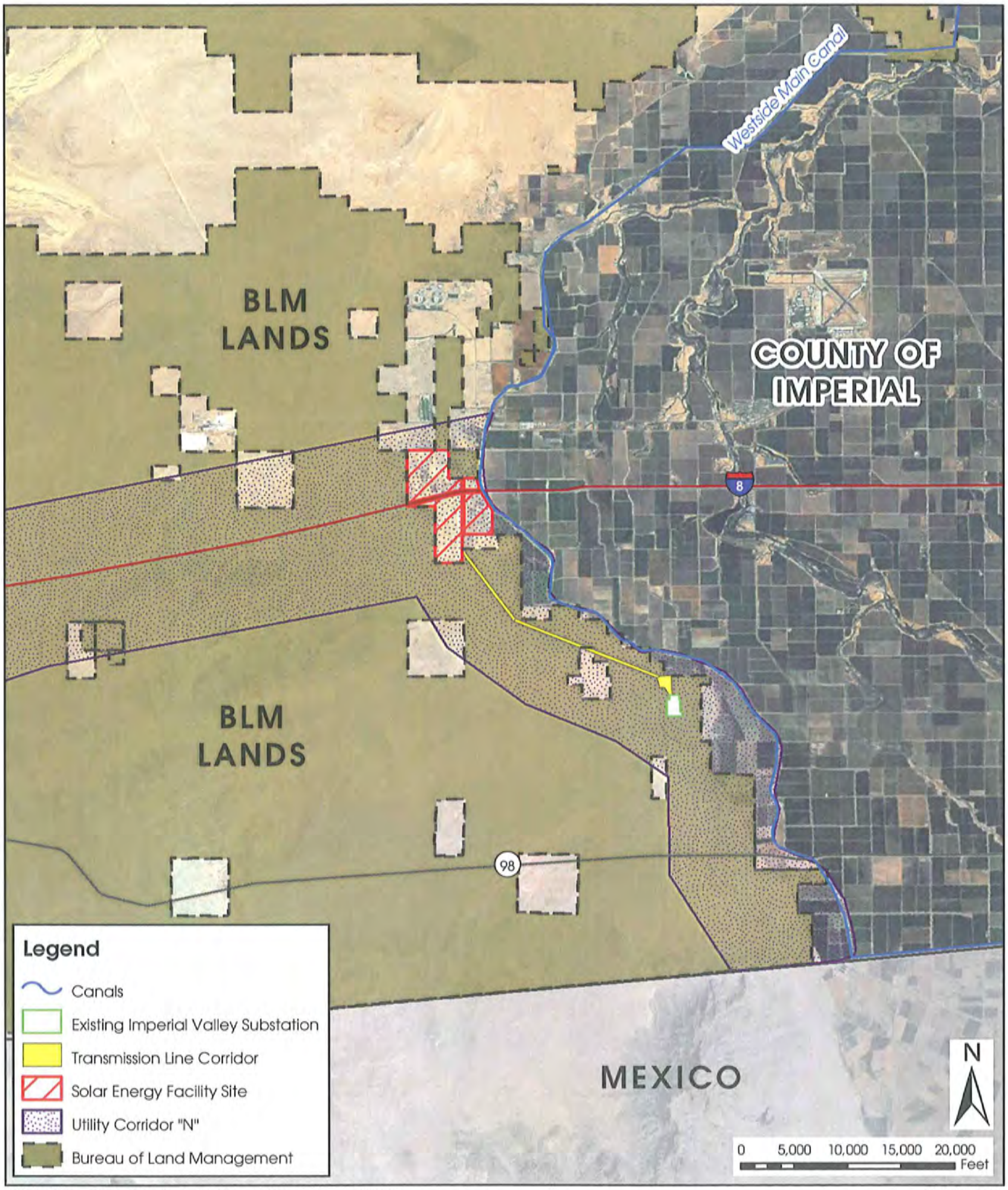
Photovoltaic Power System



Photovoltaic power systems convert the energy from sunlight directly into electricity. The process starts with photovoltaic cells that make up photovoltaic modules (environmentally sealed collections of photovoltaic cells). Groups of photovoltaic modules are wired together to form a photovoltaic array. The PV arrays convert solar radiation into direct current (DC) electricity. The direct current from the array is collected at the inverter where the direct current is converted to alternating current (AC) consistent with the electrical grid. The output from the inverter then flows through a step-up transformer before it reaches the transmission and distribution system.

Simplified Schematic





SOURCE: ESRI, 2010; BRG Consulting, Inc., 2010

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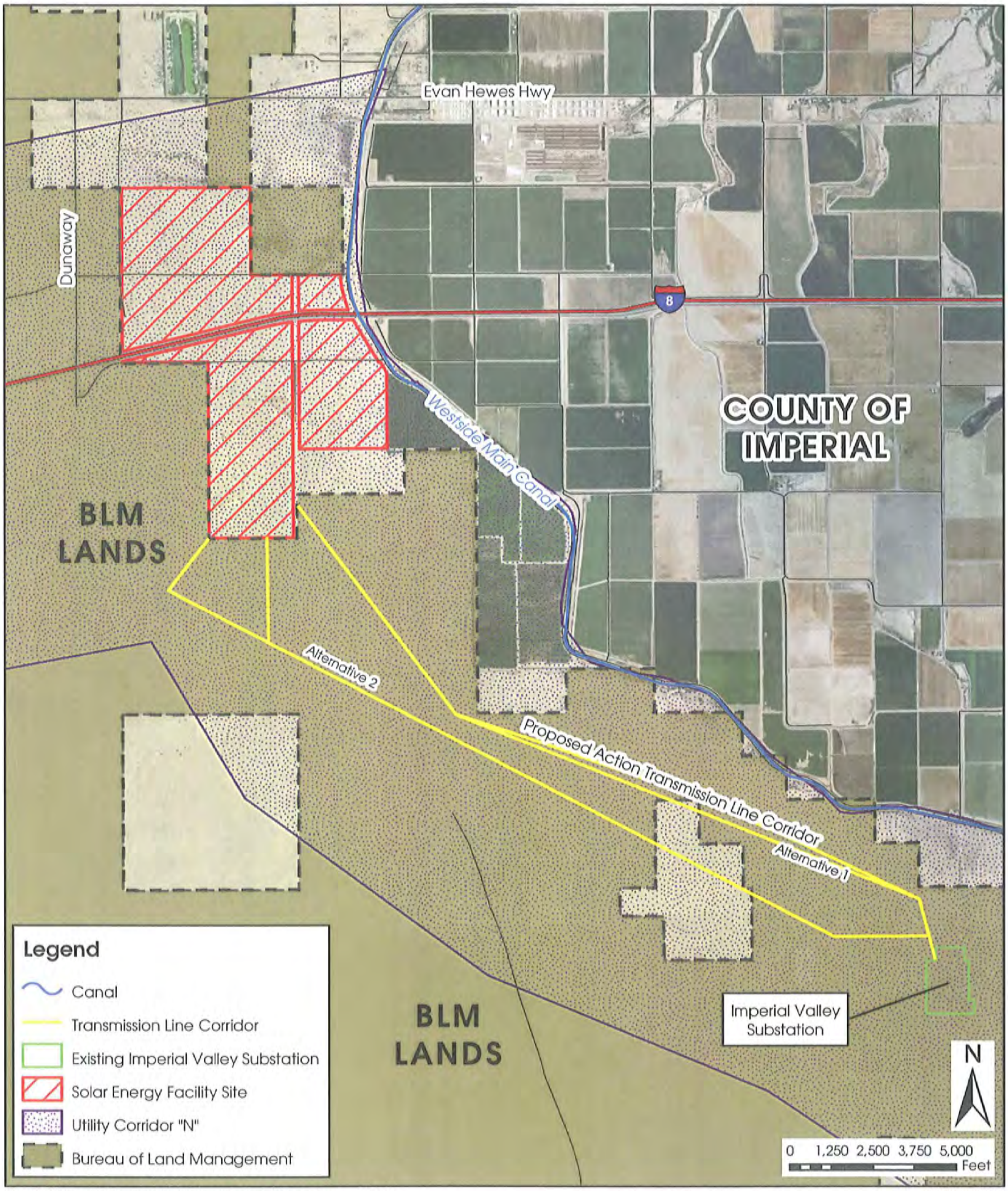
The California Desert Conservation Area Plan Utility Corridor "N"

FIGURE 2-4

F:\projects\1008 Imperial Solar West\2nd Screencheck EIR_EA\Chapter 2\Figure 2-4 Utility Corridor N.mxd



SOURCE: ESRI, 2010; BRG Consulting, Inc., 2010

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Transmission Line Corridor

FIGURE 2-5

F:\projects\1008 Imperial Solar West\2nd Screencheck EIR_EA\Chapter 2\Figure 2-5 Transmission Line Corridor.mxd

2.1.3 Description of Solar Energy Facility

The solar energy facility proposes to use photovoltaic technology as the system for generating electricity for solar power at the site. The major generation equipment that makes up the photovoltaic electrical generation system includes solar modules; a panel racking and foundation design inverter and transformer station; an electrical collection system; and, a switchyard. The facility would also have Auxiliary Equipment which would include safety and security equipment and operations and maintenance facilities.

Two types of solar module technology are being considered for use on the project site. These technologies are "concentrating photovoltaic" (CPV) solar modules and "photovoltaic" (PV) solar modules. Each of these are described in more detail below.

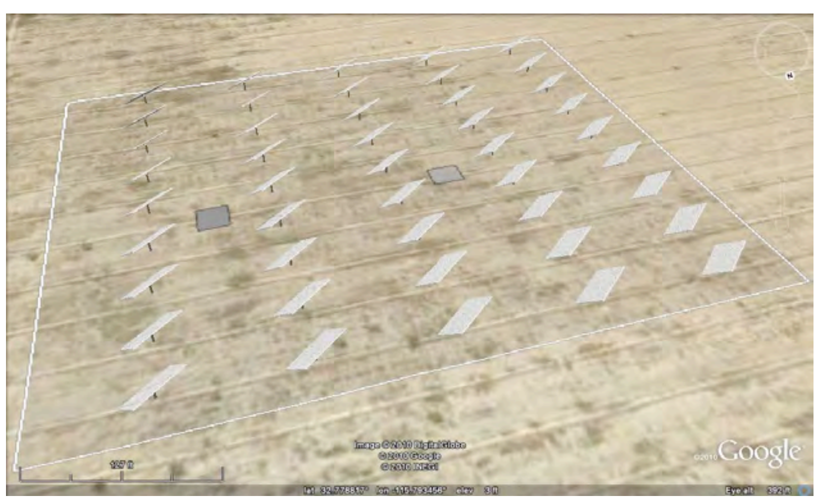
Generation Equipment

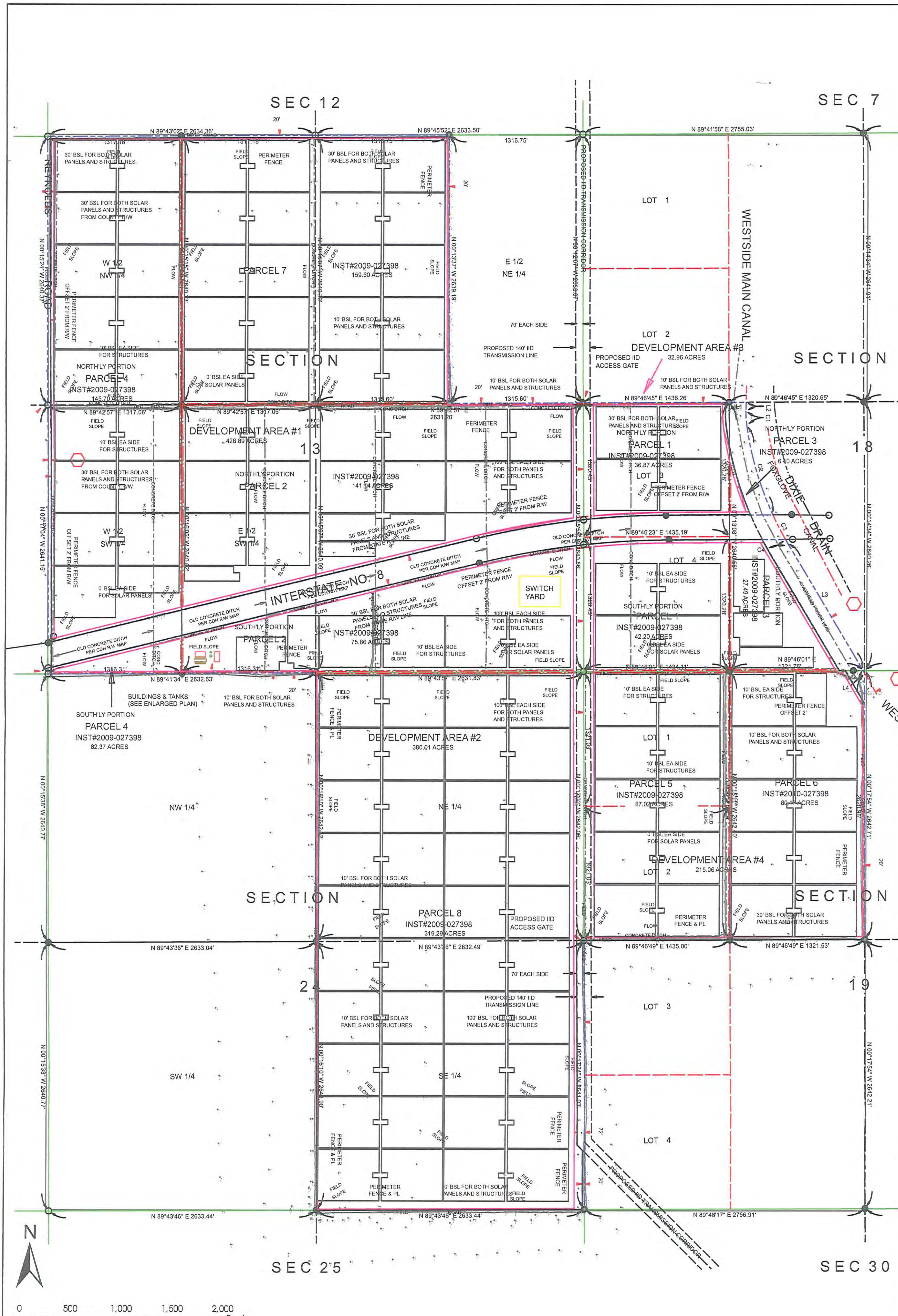
The solar energy facility would be designed so as to arrange the CPV or PV modules, inverters, and transformers into blocks that, when combined, will achieve the full solar energy plant capacity. Figure 2-6 provides the proposed site plan. Inverter and transformer sizes will be selected based on cost and market availability prior to construction. The following section describes each of the components of the generation facility.

2.1.3.1 CPVSolar Modules

The CPV Solar module uses Fresnel lenses to concentrate sunlight 500 times and focus it onto small, highly efficient III-V triple-junction solar cells that convert the light into electrical energy. The CPV modules are non-reflective and convert sunlight directly into electricity. No fossil fuels are consumed, and no greenhouse gas emissions occur during operation as the operation uses the electricity generated by the panels during the day.

Each CPV module measures 2' wide x 4' long x 4" deep and weighs 22 lbs. Inside each module are 135 cells connected in a series; providing a nominal power output of 153 watts (W) per module or 1.83 kW per supermodule. Twelve (12) CPV modules collectively comprise a supermodule that is 8' wide x 16' long. Twelve supermodules are mounted atop a two-axis elevation over azimuth tracker which follows the sun's daily trajectory across the sky to provide the highest possible level of energy production – particularly in the high-energy demand afternoon hours. Collectively, all of the trackers are wired to a centralized inverter for reliable feed-in to the power grid.





SOURCE: DDE/Zachry Engineering, 2010

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Conceptual Solar Energy Facility Site Plan

FIGURE 2-6

F:\projects\1008 Imperial Solar West\2nd Screencheck EIR_EA\Chapter 2\Figure 2-6 Conceptual Solar Energy Facility Site Plan.mxd

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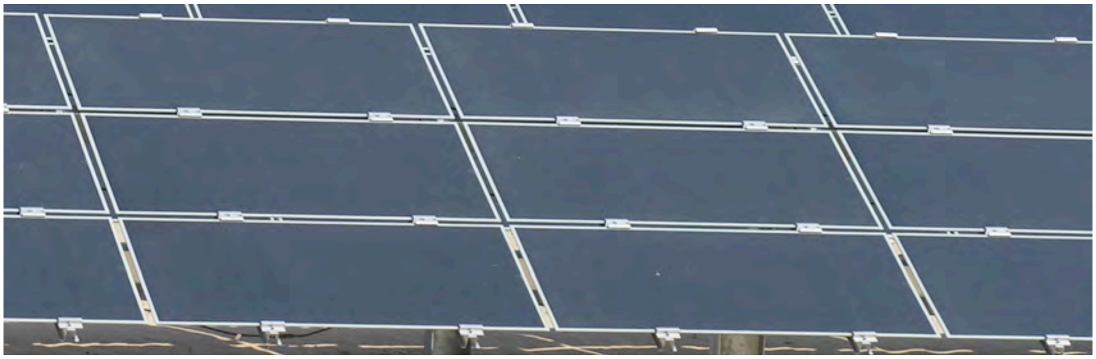
2.1.3.2 PV Solar Modules

Photovoltaic modules (or panels) will produce the electricity generated by the project facilities. PV modules are also non-reflective and convert sunlight directly into electricity. No fossil fuels are consumed, and no greenhouse gas emissions occur during operation as the operation uses the electricity generated by the panels during the day. The panels are wired together to form arrays.



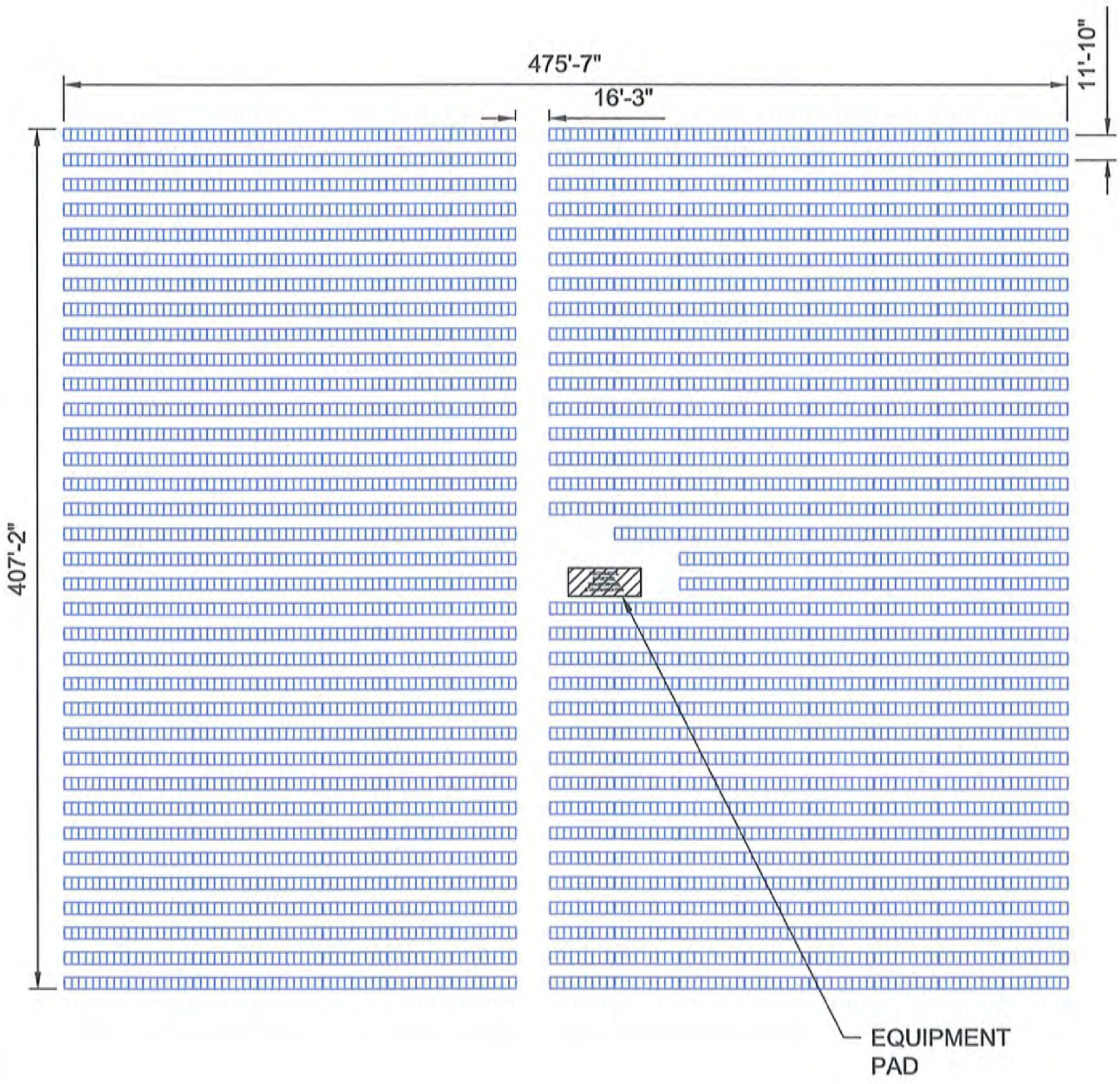
2.1.3.3 Panel Racking and Foundation Design

The PV module arrays will be mounted to racks that are planned to be supported by driven piles, drilled and grouted piles, or ballasted piles. The foundation design will be based on soil conditions. The depth of the piles will be dependent on the geotechnical recommendations for the project. The racks will be secured at a fixed tilt of 20° or 25° from horizontal facing a southerly direction or, alternatively, the project will utilize a tracker system. If a fixed mount system is selected, the tilted racking will be arranged in east-west oriented rows. If a tracker system is utilized, the modules may be arranged in either north-south or east-west oriented rows.

CPV modules will be mounted on top of a two-axis elevation over azimuth tracker. The mast will either be secured to a foundation below grade or vibratory driven into the ground, in which case the mast would serve as the foundation and the supporting structure. The solar array field is arranged in groups called “blocks.” Figures 2-7 through 2-9 show a typical array block design. The entire array block is connected to an inverter and transformer station.

The output of multiple rows of solar modules is collected through one or more combiner boxes and associated electrical wiring which deliver DC power along an underground trench (approximately 3 feet deep and up to 5 feet wide [width includes trench and disturbed area]) to the inverter at the inverter and transformer station.

(Typical PV Arrays shown above)



SOURCE: Suntech, 2010

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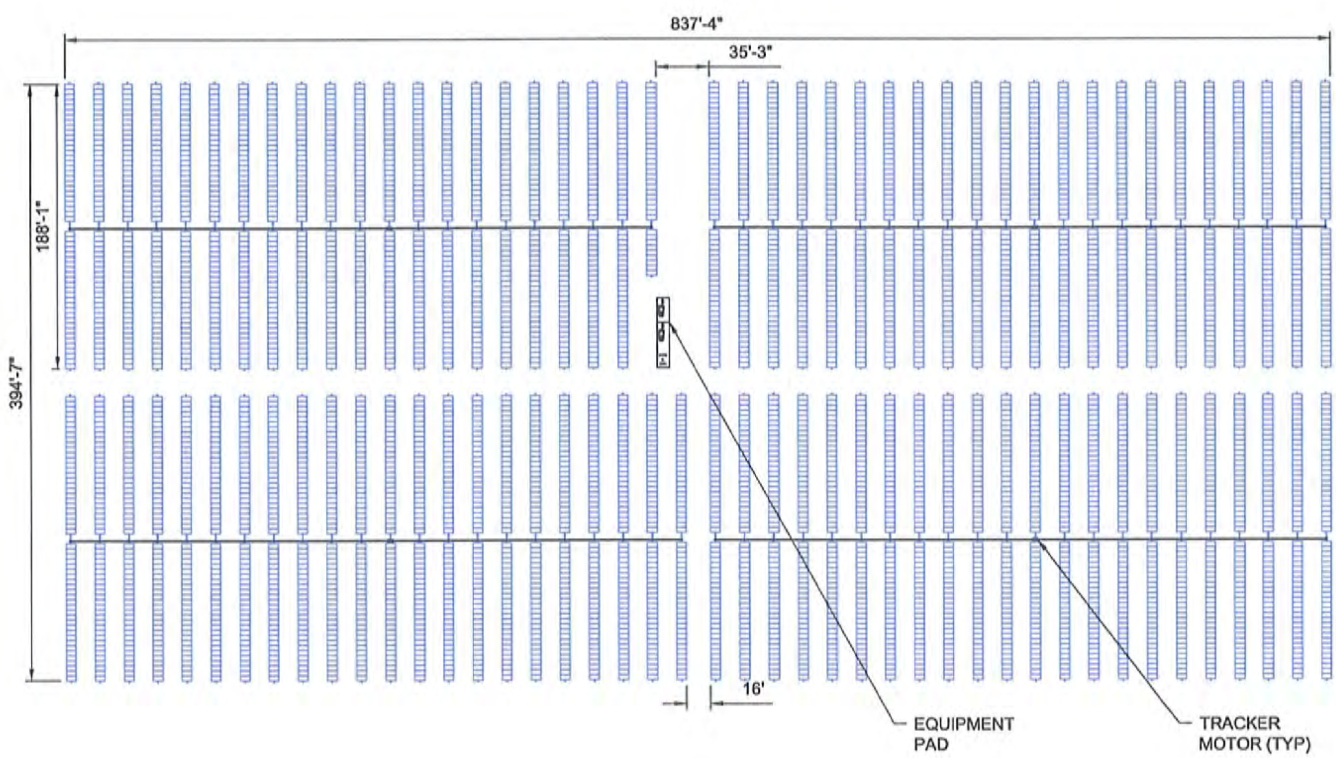
Typical Fixed Tilt Array Block

FIGURE 2-7

F:\projects\1008 Imperial Solar West\1st Screencheck EIR_EA\Chapter 2\Figure 2-7 Typical Fixed Tilt Array Block.ai



SOURCE: Suntech, 2010

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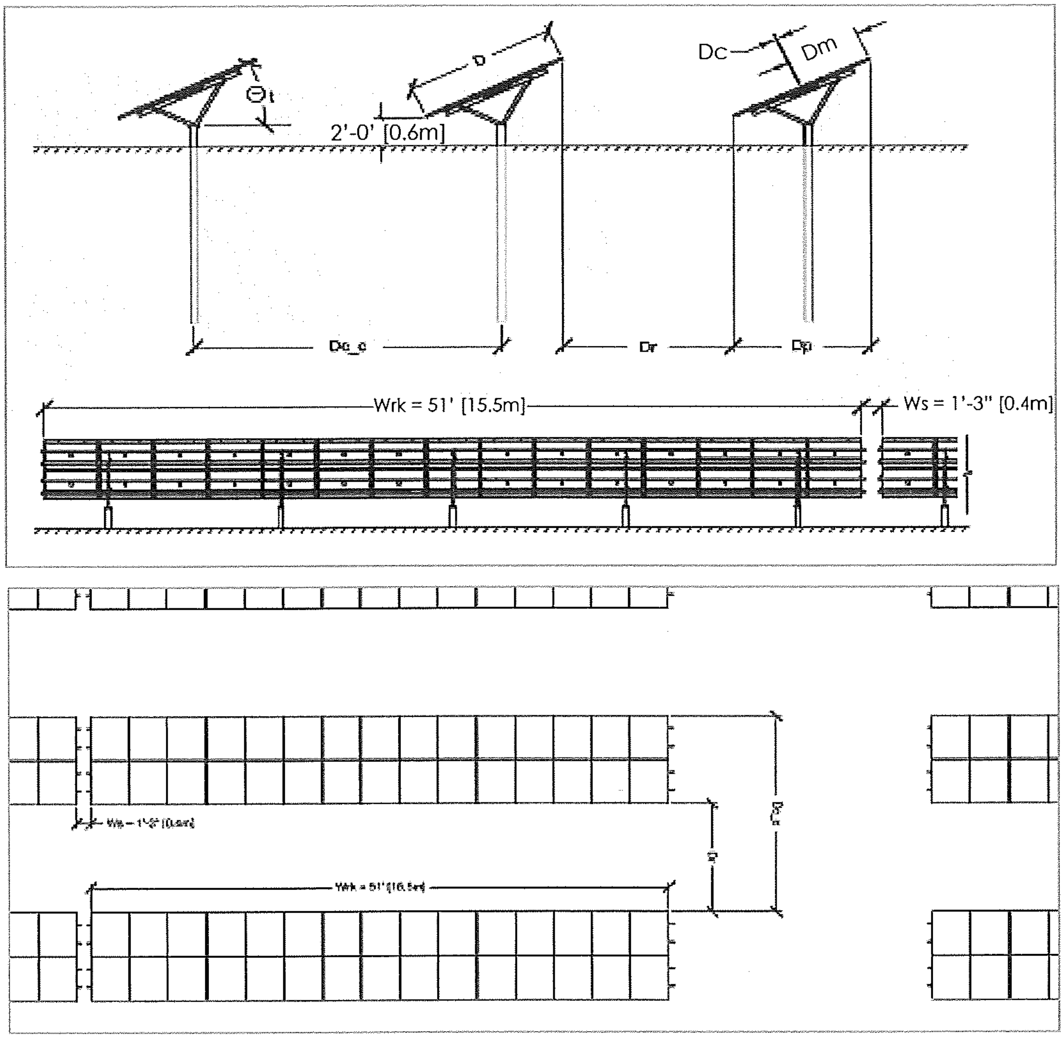
Typical Array Block Single Axis (Tracker)

FIGURE 2-8

F:\projects\1008 Imperial Solar West\1st Screencheck EIR\Chapter 2\Figure 2-8 Typical Array Block Single Axis.ai



# of modules per rack 30

Tilt Angle [Ot]	20		25	
Face projection [Dp]	8.8 Ft	2.7 m	8.5 Ft	2.6 m
Inter-row depth [Dp]	8.0 Ft	2.4 m	10.5 Ft	3.2 m
Row centers [Dc_c]	16.8 Ft	5.1 m	19 Ft	5.8 m
Rack Width [Wrk]	50.8 Ft	15.5 m	50.8 Ft	15.5 m
Inter-rack spacing [Ws]	1.0 Ft	0.3 m	1.0 Ft	0.3 m

SOURCE: Sharp Solar, 2010

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Typical Panel Racking and Foundation Design

FIGURE 2-9

F:\projects\1008 Imperial Solar West\1st Screencheck EIR_EA\Chapter 2\Figure 2-9 Typical Panel Racking and Foundation Design.ai

2.1.3.4 Inverter and Transformer Station

The project inverters and transformers, as well as other electrical equipment, are located within protective electrical equipment enclosures supported by concrete pads or compacted gravel. Typical inverter and transformer stations are shown in Figures 2-10 through 2-12. The dimensions of the inverters are approximately 3.5 feet in width by 12 feet in length by 8 feet in height. Each inverter has a capacity of 500 to 2000 kilowatts AC (kWAC).

Inverters rated for *500kW* to *2000kW* are proposed because of their high DC to AC conversion efficiency and to facilitate periodic inverter maintenance. Furthermore, utilizing standard solar inverters will provide redundancy throughout the Solar Energy Site so that, in the event that one inverter shuts down, overall plant availability temporarily decreases by only a marginal percent.

The dimensions of the transformers are 8 feet in width by 8 feet in length by 6 feet in height. Each transformer has a capacity of 500 to 4,000 kilovolt-amperes (kVA).

2.1.3.5 Electrical Collection System

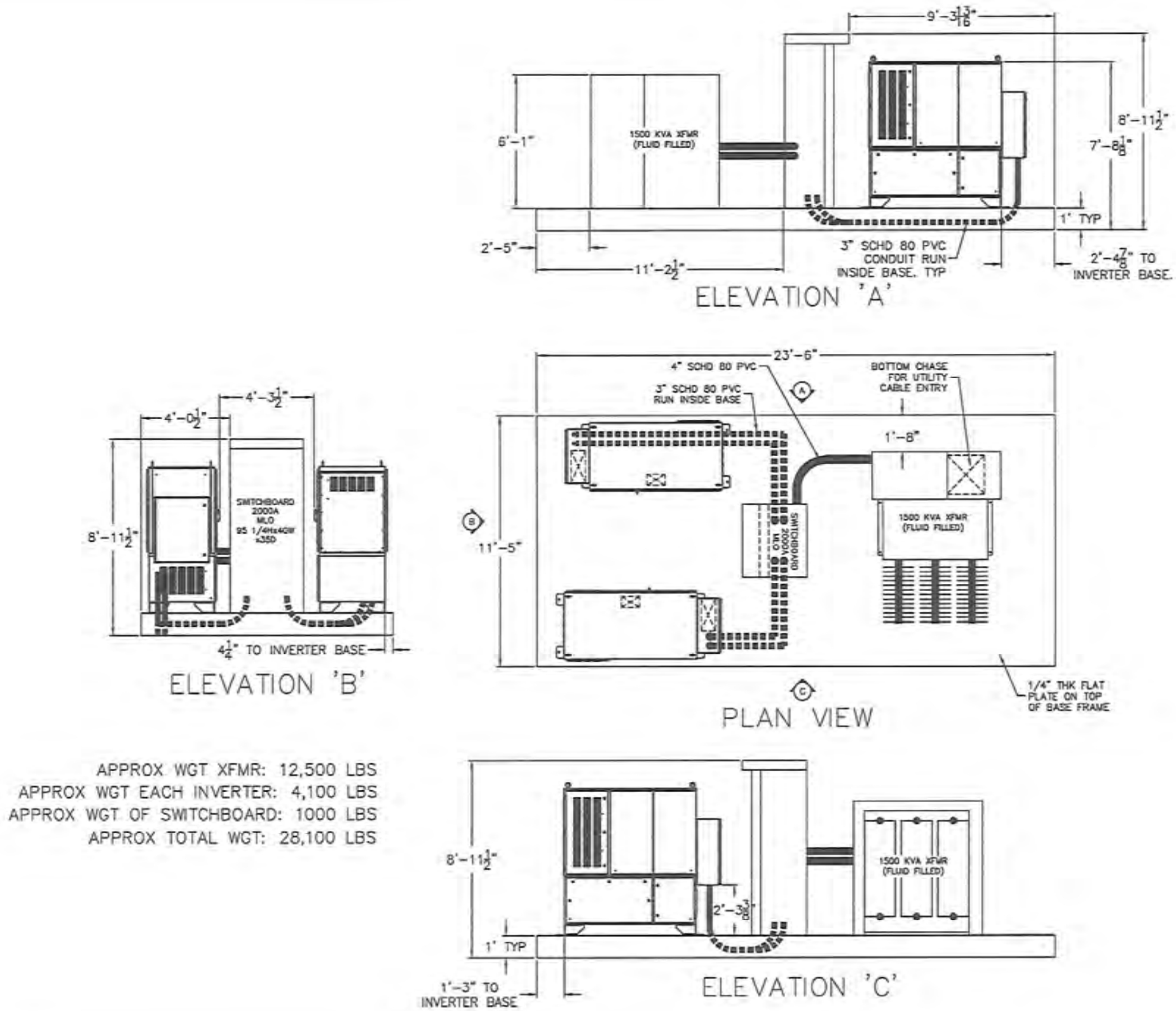
The inverter converts the DC electricity to AC electricity, which then flows to a transformer where it is stepped up to medium level voltage for collection (12.5 kV to 34.5 kV). Multiple transformers are connected together, and deliver AC power along a cable in an underground trench (approximately 4 feet deep and up to 5 feet wide [width includes trench and disturbed area]) to electrical risers located throughout the site. From the risers, the power is delivered to the internal overhead collection lines to the on-site project switchyard. The on-site overhead lines would be mounted on wooden poles approximately 60 feet tall and spaced approximately 160 feet apart. Alternatively, the project may be constructed with an underground collection system.

2.1.3.6 Switchyard

The switchyard will step up the collection level voltage to 230 kV for off-site transmission to the Imperial Valley substation via a new 230-kV transmission line (this transmission line is described in Section 3.4). A typical switchyard layout and elevation is shown in Figures 2-13 and 2-14.

Transformers contain dielectric fluid (mineral oil) and will be located on a concrete pad approximately 30 feet long by 15 feet wide, surrounded by an earthen or concrete containment berm/curb approximately 55 feet long by 35 feet wide. The containment area will be lined with an impermeable membrane covered with gravel, and will drain to an underground storage tank. The above containment/storage tank/ holding pond system will be designed to accommodate the volume of the dielectric fluid in the transformer plus an allowance for precipitation.

Grounding of the project substation will be accomplished by a ground grid designed to meet the requirements of Institute of Electrical and Electronics Engineers (IEEE) 80, "IEEE Guide for Safety in AC Substation Grounding." Final ground grid design will be based on site-specific information such as available fault current and local soil resistivity. Typical ground grids consist of direct buried copper conductors with 8-



SOURCE: Hill Phoenix, 2010

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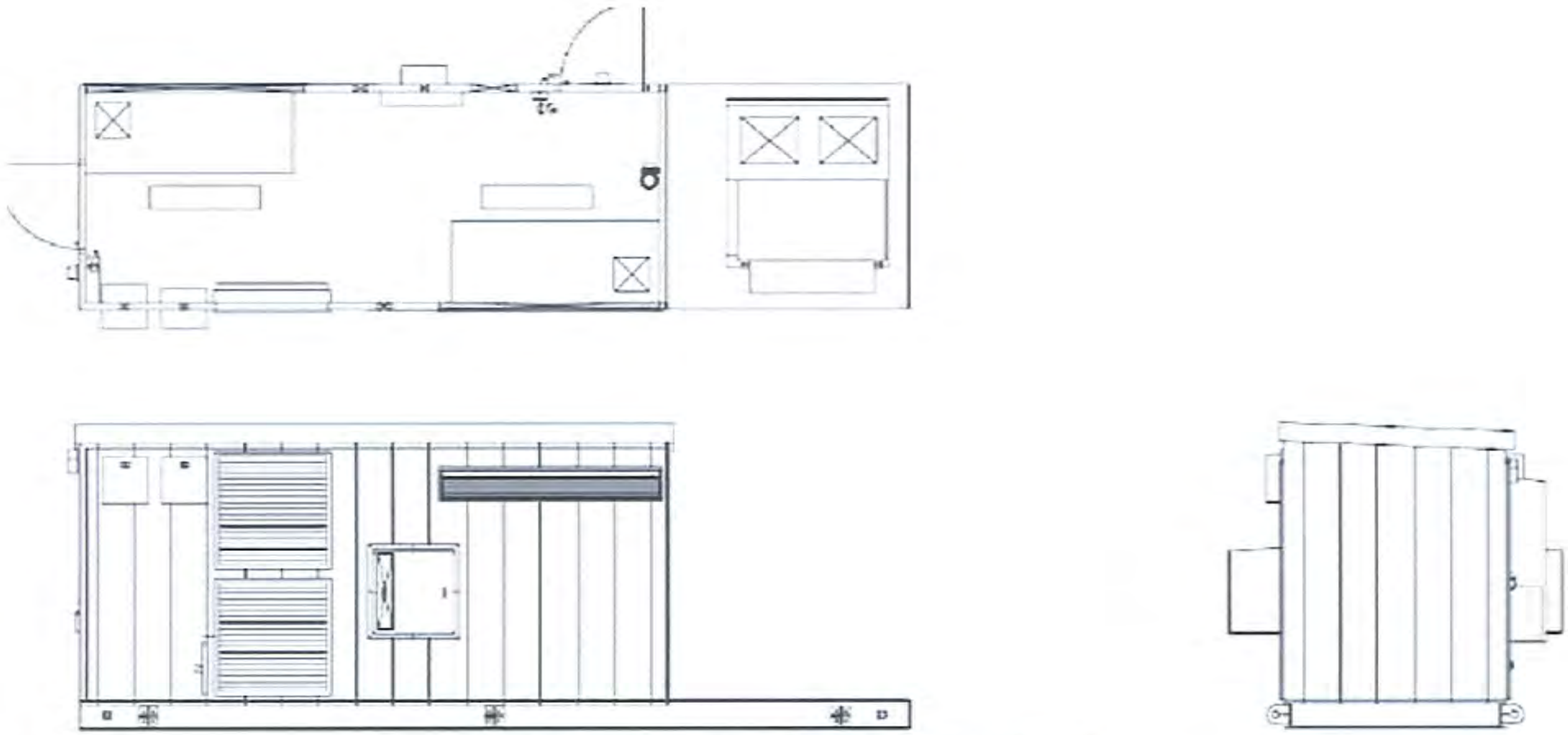
1MW Solar Inverter/Transformer Station - Typical

FIGURE 2-10

F:\projects\1008 Imperial Solar West\1st Screencheck EIR_EA\Chapter 2\Figure 2-10 1MW Inverter Station.ai



Note: Production Unit may differ from picture above.

CONSTRUCTION

Unit will be a weatherproof (NEMA 3R) structure with exterior walls and roof fabricated from self framing interlocking panels to house and protect the internal equipment from the elements.

Structural grid base and floor will be designed for applicable floor loading allowing the structure to be lifted and transported with the interior equipment installed.

SOURCE: Schneider Electric, 2010

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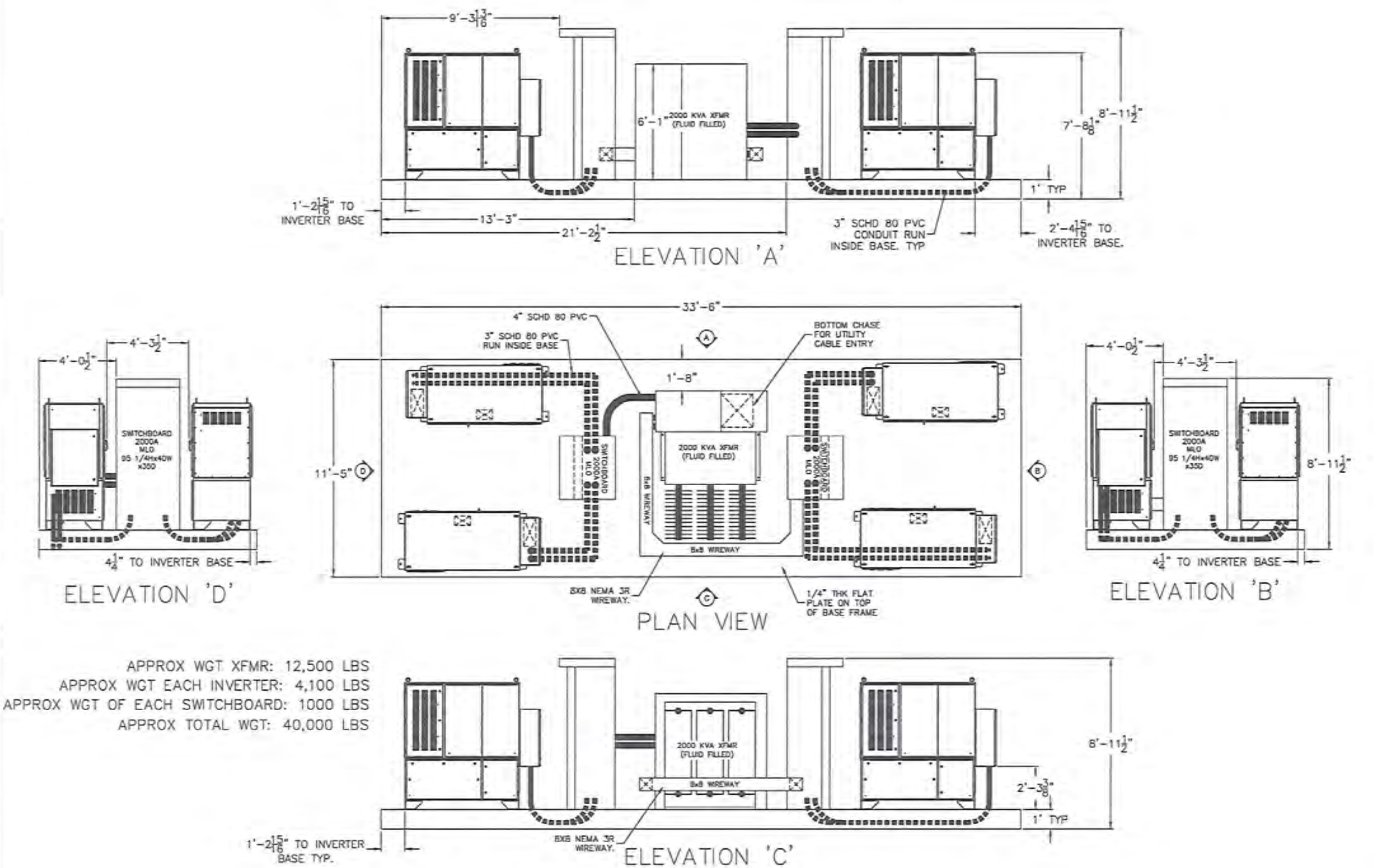
Typical 1MW Inverter Station with Transformer Platform

FIGURE 2-11

F:\projects\1008 Imperial Solar West\1st Screencheck EIR_EA\Chapter 2\Figure 2-11 Typical 1MW Inverter Station.ai



SOURCE: Hill Phoenix, 2010

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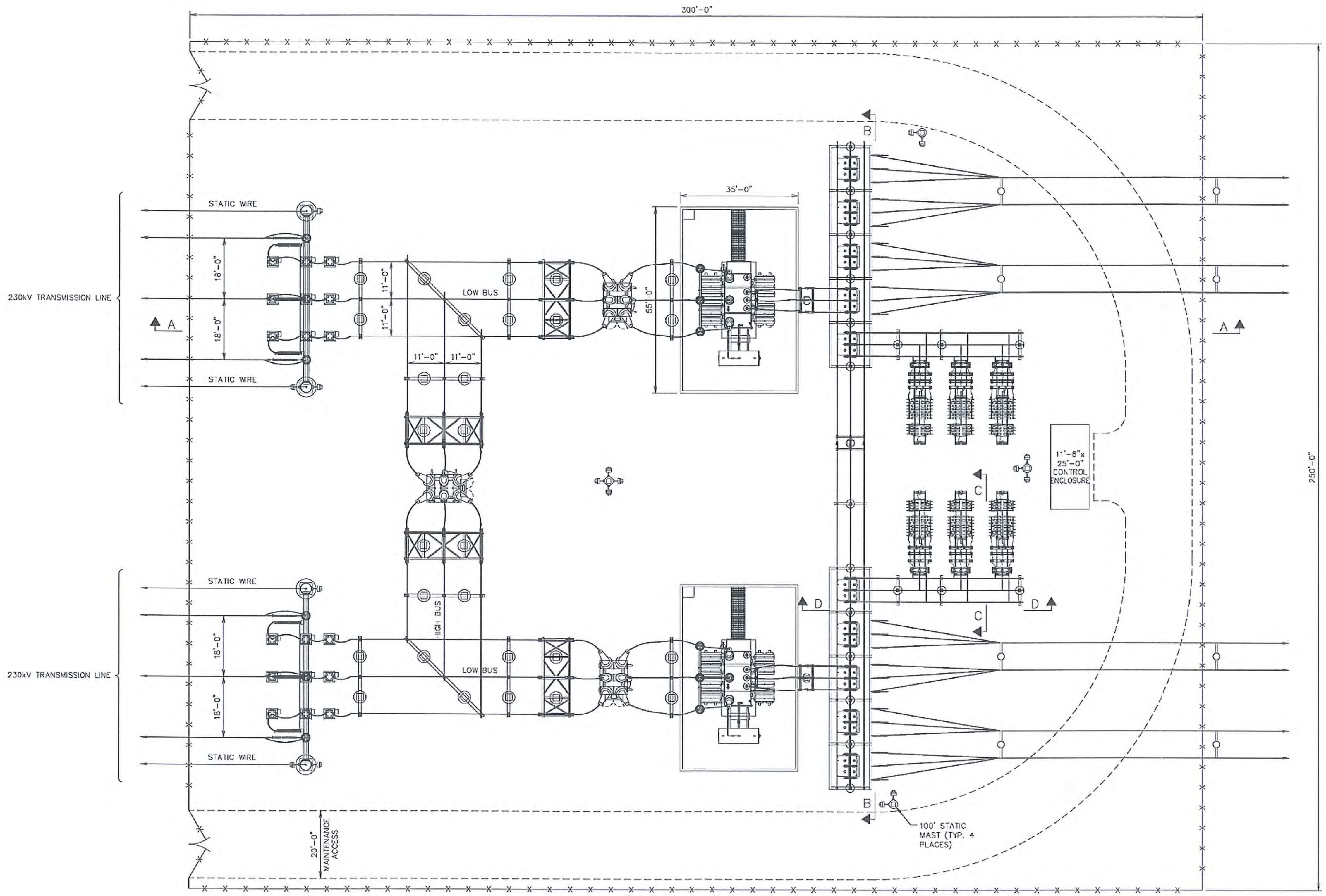
2MW Solar Inverter/Transformer Station - Typical

FIGURE 2-12

F:\projects\1008 Imperial Solar West\1st Screencheck EIR_EA\Chapter 2\Figure 2-12 2MW Inverter Station.ai



250MW Switchyard

SOURCE: Dashiell Corp, 2010

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Conceptual 250MW Switchyard Plan - Interconnection to Imperial Valley Substation

FIGURE 2-13

F:\projects\1008 Imperial Solar West\1st Screencheck EIR_EA\Chapter 2\Figure 2-13 Conceptual 250MW Switchyard Plan.ai

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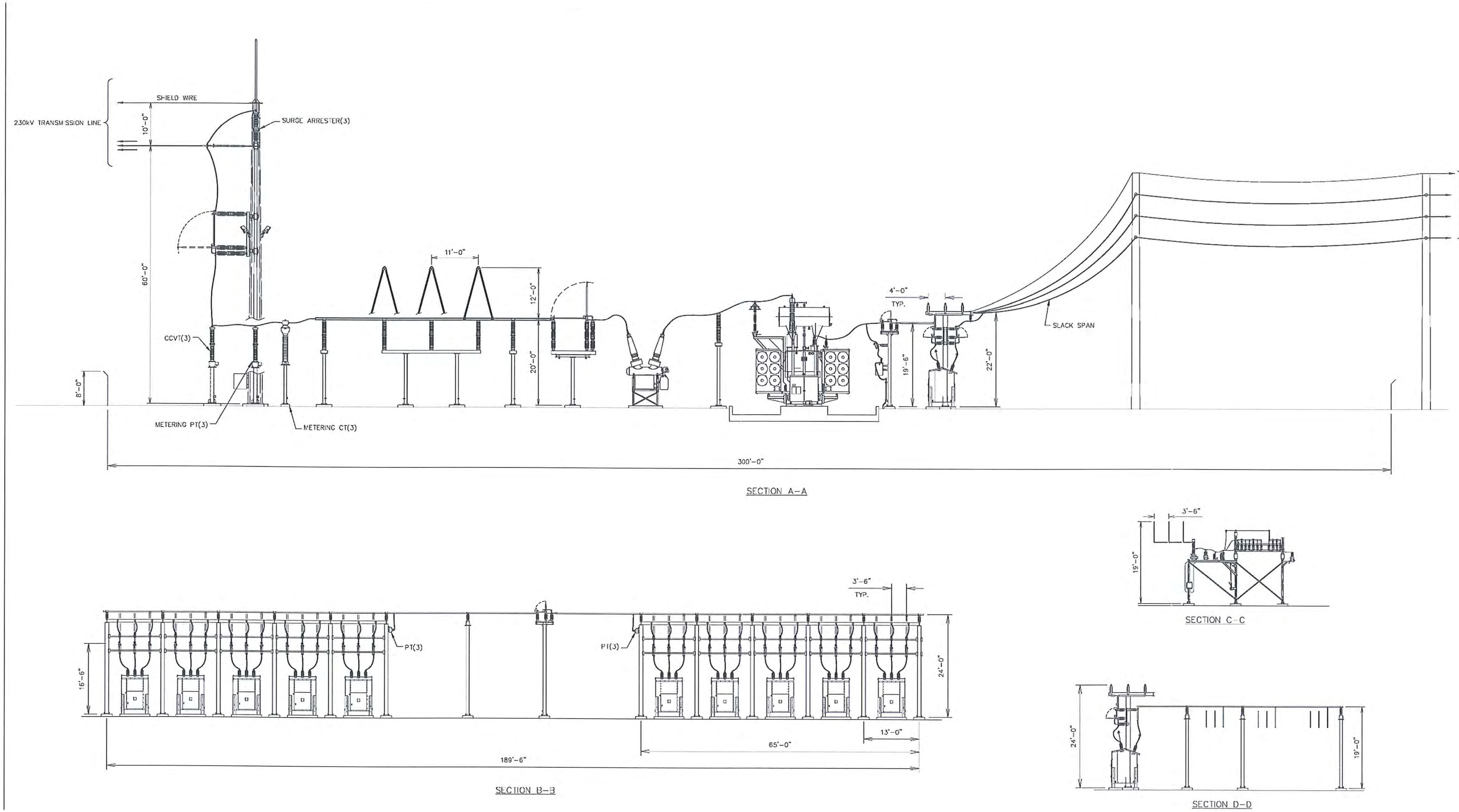

250MW Switchyard

SOURCE: Dashiell Corp, 2010

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Conceptual Switchyard Elevation Plan

FIGURE 2-14

F:\projects\1038 Imperial Solar West\1st Screencheck EIR_EA\Chapter 2\Figure 2-14 Conceptual Switchyard Elevation Plan.ai

Back of 11 x 17

foot-long copper-clad ground rods arranged in a grid pattern to approximately 3 feet outside of the substation area.

2.1.3.7 Auxiliary Facilities

A. Safety & Security Equipment

Perimeter Fence
The solar energy facility site perimeter will be secured with security fencing.

Access Gates & Gatehouse
Controlled access gates will be located at the site entrances. Additionally, the BLM, County Fire, and Border Patrol will be granted access to all locked gates. A small gatehouse will be constructed at the main gate to the project for times when the gate needs to be staffed to control access.

Security System
Cameras will be utilized throughout the facility and equipped with remote monitoring capabilities to deter vandalism.

Lighting System
Project lighting will be primarily in the area of the operations and maintenance (O&M) building. Lighting will be designed to provide the minimum illumination needed to achieve safety and security objectives and will be downward facing and shielded to focus illumination on the desired areas only.

Access Roads
Paving road facilities onsite is not proposed in order to allow water to continue to percolate into the soil. The roads will be constructed to all weather access standards. A network of roads between solar blocks will provide operations and maintenance access to solar equipment (e.g., solar panels, inverters, transformers). These roads will be 20 feet in width to allow for emergency access.

The main site access road will be to exit Interstate 8 at Dunaway Road and traveling east along the service road south of the highway to reach the O&M Building. Alternative site access to the northern portion of the Solar Energy Site will be north from Interstate 8 on Dunaway Road and then east on Strobel Road.

Staffing
Daily operation of the solar energy facility will involve four full time employees working at the facility. A security guard will monitor the facility 24 hours per day. Maintenance workers will be onsite as needed from 6:30 a.m. to 7:30 p.m.

Fire Protection
The solar energy facility site is within the jurisdiction of the Imperial County Fire Department. The facility will maintain the required volume of water required for fire fighting, based on the number and sizes of

structures on the site. This will be provided in a fire suppression water storage tank. The fire suppression water storage tank will be located within 150 feet of the O&M building. Proposed fire protection measures include sprinkler systems in the O&M building. A FM200 fire suppression system, or equivalent will be used in the plant control room and electrical/control rooms. Fire protection measures will include portable carbon dioxide (CO_2) fire extinguishers mounted outside inverter/electrical distribution containers on pads throughout the solar array. Additionally, fire protection for the solar array and the off-site transmission line will be provided by vegetation management programs.

During facility operations, vegetation within the Solar Energy Site would be controlled to minimize the risk of wildfire. Vegetation would be cut in April of each year to a height of 6 inches or less above the ground surface, and would be maintained at approximately this height via supplemental cutting, as necessary, through January. Vegetation such as grasses and wildflowers would be allowed to grow to a height of no more than 18 inches from February 1 through mid-April to ensure that a seed supply is maintained to perpetuate these annual vegetation types. Vegetation would be cut again each April prior to the start of fire season on May 1.

The solar energy facility inverters and transformers may be contained in metal or concrete structures, which would be designed to meet National Electric Manufacturers Association (NEMA) 1 or NEMA 3R IP44 standards for electrical enclosures. All electrical equipment (including inverters) not located within a larger enclosure will be designed specifically for outdoor installation. Outdoor electrical equipment would be contained within individual NEMA 3R metal clad enclosures. Additionally, the electrical equipment (whether contained within an enclosure or outdoor-rated) are subject to the product safety standard requirements of the UL and Conformance European (CE) certifications, which include assurance that the equipment would be safe to touch by humans and wildlife, and would not pose electrical shock or fire hazards.

Overall maintenance of the facility would include proper storage of flammable materials, upkeep of operating equipment, and management of vegetative growth. In addition the Project will comply with additional requirements of the Imperial County Fire Department (ICFD).

A Fire Protection and Prevention Plan will also be prepared and submitted to the ICFD for review and approval prior to issuance of a Grading Permit. The Plan would address construction and operation activities for the solar facility, and establish standards and practices that will minimize the risk of fire danger, and in the case of fire, provide for immediate suppression and notification.

The Fire Protection and Prevention Plan will address spark arresters, smoking and fire rules, storage and parking areas, use of gasoline-powered tools, road closures, use of a fire guard, and fire suppression equipment and training requirements. In addition, all vehicle parking, vegetation, and flammable materials. All areas used for dispensing or storage of gasoline, diesel fuel or other oil products will be cleared of vegetation and other flammable materials. These areas would be posted with signs identifying they are “No Smoking” areas. An interim fire protection system would be provided during construction until the permanent system is completed.

Special attention would be paid to operations involving open flames, such as welding, and use of flammable materials. Personnel involved in such operations would be required to have appropriate training. A fire watch utilizing appropriately classed extinguishers or other equipment would be maintained during hot work operations. Site personnel would not be expected to fight fires past the incident stage. The local responding fire officials would be given information on the solar facility site hazards and the location of these hazards, and the information would be included in the emergency response planning.

Materials brought on-site would conform to contract requirements, insofar as flame resistance or fireproof characteristics are concerned. Specific materials in this category include fuels, paints, solvents, plastic materials, lumber, paper, boxes, and crating materials. Specific attention shall be given to storage of compressed gas, fuels, solvents, and paint. Electrical wiring and equipment located in inside storage rooms used for Class I liquids would be required to be stored in accordance with applicable regulations. Outside storage areas would be graded to divert possible spills away from buildings and shall be kept clear of vegetation and other combustible materials as described in Section 4.10 Health, Safety and Hazardous Materials/Fire and Fuels Management.

As proposed, on-site fire prevention during construction would consist of portable and fixed firefighting equipment. Portable firefighting equipment would consist of fire extinguishers and small hose lines in conformance with Cal-OSHA and the National Fire Protection Association (NFPA) for the potential types of fire from construction activities. Periodic fire prevention inspections would be conducted by the contractor's safety representative.

Fire extinguishers would be inspected routinely and replaced immediately if defective or in need of recharge. All firefighting equipment would be required to be conspicuously located and marked with unobstructed access. A water supply of sufficient volume, duration, or pressure to operate the required firefighting equipment would be provided on-site. Authorized storage areas and containers for flammable materials would be used with adequate fire control services. The Operations Fire Protection and Prevention Program would be required to address the following:

- Names and/or job titles responsible for maintaining equipment and accumulation of flammable or combustible material control.
- Procedures in the event of fire
- Fire alarm and protection equipment

System and equipment maintenance

- Monthly inspections
- Annual inspections
- Firefighting demonstrations
- Housekeeping practices
- Training

Storm Water Detention Basin

Storm water entering the site from off site will be channeled through a ditch or ditches to a detention basin. Water will be held in the detention basin until it percolates into the soil or drains through existing drainage pipes into the IID drainage canal system.

2.1.3.8 Operations and Maintenance Facilities

A. Operations and Maintenance Building

The project will include a single operations and maintenance (O&M) building located adjacent to the Solar Energy Site (Figure 2-6) within the solar energy facility site. The design and construction of this building will be consistent with County building standards and similar in appearance to the agricultural buildings in the area.

The O&M building will include administrative and operational offices as well as material and equipment storage. The maintenance area of the building will be provided with roll-up doors to provide equipment access to the maintenance portion of the building as well as personnel access doors. The operations area of the building will be divided into several rooms using commercial construction materials consistent with the California Building Code and the Imperial County building code.

The O&M building may be supported on either structural mat foundations, drilled piers or driven pile foundations. The foundation type will be determined during final design.

The O&M building will require a small amount of electricity from IID's system. The power will be used to run the lighting, security, and monitoring systems. This power is expected to be provided via the existing power lines that run along Pullman Road or Anza Road. The building will be approximately 10,000 square feet with a maximum height of 25 feet tall.

B. Worker Parking

A paved worker and visitor parking area will be provided adjacent to the Operations & Maintenance building.

C. Water Supply, Treatment and Storage

Once the solar energy facilities are fully operational, water will be required for domestic use, solar panel washing, and fire protection. The facility will use a maximum of approximately five acre-feet of water per year. Water for panel washing and fire protection will be stored in a configuration of two 10,000-gallon water tanks or one 20,000-gallon tank on site. An onsite water treatment facility will draw water from the Westside Main Canal and treat it to the level required for domestic and panel washing use. Alternatively, water may be trucked to the site in tanker trucks and stored on site for domestic use, panel washing and dust suppression. Bottled water will be trucked to the site for drinking water.

Typical system configuration with two 10,000-gallon tanks and plant in building

D. Meteorological Station(s)

The project will include one or more on-site Solar Meteorological Stations (SMS) located within the solar energy facility site. Each SMS will consist of solar energy (irradiance) meters, as well as an air temperature and a wind meter. The equipment will be mounted on tripods, 6 and 10 feet in height. The SMS will be located inside the solar array field as required to qualify the solar resource for electrical generation predictions and coordination with the California Independent Systems Operator (CAISO).

E. Monitoring and Control Systems

The solar energy facility will have a Supervisory Control and Data Acquisition (SCADA) system that will allow for remote monitoring and control of inverters and other project components. The SCADA system will be able to monitor project output and availability, and to run diagnostics on the equipment.

The solar energy facility will also have a local overall plant control system (PCS) that provides monitoring of the Solar Energy Site as well as control of the balance of facility systems. The microprocessor-based PCS will provide control, monitoring, alarm, and data storage functions for plant systems as well as communication with the Solar Energy Site SCADA system.

2.1.3.9 Grading, Drainage & Erosion Control

The proposed project includes project design features to minimize the project's impacts to the environment. These project design features are integral to the project and are shown in Appendix J Project Design Features of this EIR/EA. The following summarizes some of the major features.

A. Grading

The solar energy facility project site is currently flat, flood irrigated agricultural fields. The final grading plan will be determined based on the final project design. Minimal grading is expected due to the topography of the site and the proposed construction methods, which would retain the basic topographical features and minimize vegetation removal and disturbance.

B. Drainage & Erosion

Most of the solar energy facility site will be drained by sheet flow. The existing IID field drain inlets will be utilized. Areas of the facility that may release contaminants such as the O&M building and delivery areas will be provided with storm water containment designed to accommodate runoff in accordance with County guidelines. A storm water pollution prevention plan (SWPPP) outlining the various Best Management Practices (BMPs) for minimizing erosion and runoff would be prepared prior to project construction. Typical erosion control devices would include use of sandbags, straw bales, temporary desilting basins, silt fencing, and structural BMPs such as oil/water separators.

C. Percolation & Groundwater

Construction and operation of the facility will leave the existing ground conditions largely in place minimizing impacts to storm water runoff and groundwater conditions.

Comparatively small portions of the site will be covered with all-weather roads. Also only very small areas such as the O&M building, switchyard, and inverter and transformer stations will have impervious surfaces.

D. Existing Berms

The project site is currently protected by a number of earthen berms. These berms were constructed to facilitate farming operations. The existing berms are constructed of partially compacted earth. The berms have not been maintained since agricultural operations ended over ten years ago. As part of the project these berms will be inspected and maintained or enhanced.

E. Detention Basin

Off-site storm water entering the site will be channeled to a detention basin. The water will be held in the detention basin until it either percolates into the soil or drains through the existing drain pipes into the IID drainage canal system.

2.1.3.10 Construction Process for the Solar Energy Facility

A. Construction and Staging Activities

Construction of the solar energy facility from site preparation and grading to commercial operation is planned to take 17 months beginning in September 2011.

Assembly and construction of the solar arrays will occur throughout the facility. The site will be built in phases with the equipment and materials being temporarily stored adjacent to their final locations. All staging areas would occur within the solar energy facility site.

Construction access will be via the Dunaway Road exit from Interstate 8. The southern portion of the site will be accessed via a short service road to the site. The northern portion of the site will be accessed by traveling north on Dunaway Road and turning right (east) on Strobel Road which leads into the site.

The facility is anticipated to be operational in approximately 10 MW phases. Each phase will be connected to the grid as construction and testing is completed. Completion of the first phase is estimated to occur in September 2012.

B. Construction Workforce

The on-site assembly and construction workforce is expected to reach a peak of approximately 285 workers under the expected construction schedule. Construction will generally occur between 7am and 3pm Monday through Friday. Additional hours may be necessary to make up schedule deficiencies or to complete critical construction activities. Hours may also be shifted by the construction contractor to avoid peak temperature time periods and for worker safety subject to review and approval of the County of Imperial Planning and Development Services Department Director. The labor pool of construction workers is anticipated to come primarily from workers based in Imperial County. A few specialists from outside the valley will be brought in for specific tasks.

C. Deliveries

A majority of all equipment will be delivered to the solar energy facility site in standard width and length 53-foot covered vans or 48-foot flatbed trailers. Substation equipment and cranes will be delivered to the site on wide load trailers. These trailers will require pilot cars and are not expected to make more than 30 round trips throughout the installation period. Types of deliveries and the corresponding vehicles are as follows:

<u>Solar Panels</u>

- Standard width 53-foot van

<u>Inverters</u>

- Standard width 48-foot flatbed trailer

<u>Racking Steel</u>

- Standard width 48-foot flatbed trailer

<u>Concrete Materials</u>

- Standard width dump truck

<u>Transmission Poles</u>

- Standard width 48-foot flatbed trailer

<u>Substation Steel</u>

- Standard width 48-foot flatbed trailer

<u>Substation Transformers</u>

- 48-foot lowboy trailer with pilot cars

<u>Cranes</u>

- 35 ton crane: 48-foot wide-load lowboy trailer with pilot cars
- 60-100 ton crane: wide-load self-propelled trucks with two jib companion flat beds

Deliveries will be intermittent throughout the day. Truck traffic will use Interstate 8 to make deliveries to the site.

D. Water Use

Approximately 55 acre feet of water will be required during construction to support concrete manufacturing for the equipment pads, dust control, panel washing, and sanitary use.

2.1.3.11 Operations and Maintenance of Solar Energy Facility

A. Workforce

The solar energy facility will primarily operate during daylight hours and will require approximately 4 fulltime personnel for operations, and maintenance. The solar energy facility site will be staffed with a security guard 24 hours per day, seven days per week. Regular security patrols will be conducted throughout the site.

B. Water and Panel Washing

Once the plant is operational, a maximum of approximately 5 acre-feet per year of water will be required--primarily for panel washing.

Water would be sprayed on the CPV and/or PV panels using a wash truck with a water tank to remove dust in order to maintain efficient conversion of sunlight to electrical power. The cleaning interval would be determined by the rate at which electrical output degrades between cleanings. It is estimated that panel cleaning will be required about twice per year and approximately 1 gallon would be required for washing each PV module.

C. Other Maintenance Activities

The ongoing maintenance requirements for the solar farm once it is constructed are minimal. Operations and maintenance activities include:

- Replacing any defective solar panels
- System testing
- Maintaining the inverters and transformers will require maintenance a few times per year
- Equipment inspections
- Maintaining the switchyard

No heavy equipment will be used during normal project operation. Operation and maintenance vehicles will include utility vehicles, trucks, forklifts and loaders for routine and unscheduled maintenance. Large heavy haul transport equipment may be brought to the site infrequently for equipment repair or replacement.

D. Noise

Noise from the facility during operations will be limited to light duty vehicle traffic for security patrols, maintenance staff and wash crews. High voltage transmission lines and transformers make a low level of noise. See the following chart for relative noise levels.

Typical Sound Levels for Select Noise Sources		
Type Of Activity	Sound Level In Decibels (dB)	Subjective Impression
Civil Defense Siren (100 feet)	140	Pain Level
Jet Takeoff (200 feet)	120	Pain Threshold
Loud Automobile Horn (3 feet)	115	Extremely Loud
Jet Takeoff (2,000 feet)	105	Very Loud
Pile Driver (50 feet)	100	Very Loud
Freight Cars (50 feet)	95	Very Loud
Heavy Truck (50 feet)	90	Very Loud
Ambulance Siren (100 feet)	90	Very Loud
Riding Inside a City Bus	83	Loud
Pneumatic Drill (50 feet)	80	Loud
Alarm Clock (2 feet)	80	Moderately Loud
Average Traffic on Street Corner	75	Moderately Loud
Freeway (100 feet)	70	Moderately Loud
Vacuum Cleaner (10 Feet)	69	Moderately Loud
Conversational Speech	**60**	**Medium**
Department/Large Retail Store	60	Medium
Light Auto Traffic (100 feet)	**55**	**Medium**
Large Transformer (200 feet)	**40**	**Quiet**
Library	35	Quiet
Soft Whispering (5 feet)	30	Quiet
Transmission Line	**20**	**Quiet**
Hearing Threshold	10	Very Quiet

Sample Table of Noise Levels for Selected Noise Sources

E. Air Quality & Dust Suppression

Minimal grading of the site will be performed during construction and limited travel over the site during operations will be needed. It is anticipated that existing, non-agricultural vegetation would remain largely intact which will assist in dust suppression. As necessary, dust suppression will be implemented into the proposed project. Pursuant to Imperial County Air Pollution Control District's Rule 801: Construction and Earthmoving Activities, active areas must be watered at least once a day and the operator must ensure that visible dust emissions (VDE) are limited to 20% opacity.

F. Weed Management

A weed control plan will be developed prior to construction to provide:

1. monitoring, preventative and management strategies for weed control during construction activities at the project.
2. control and management of weeds in areas temporarily disturbed during construction where native seed will aid in site revegetation.
3. a long-term strategy for weed control and management during the operation of the project.

G. Waste Management

During operations, generation of waste will be minor. Solid wastes will be disposed of using a locally-licensed waste hauling service. Domestic wastewater from the O&M building is expected to be limited in volume due to the few staff members on site (approximately four full-time employees). This wastewater will be treated via a septic system.

A Hazardous Materials Management Program (HMMP) will be developed and implemented for the project construction and operation phases. At a minimum, the HMMP will include procedures for:

- hazardous materials handling, use and storage
- emergency response
- spill control and prevention
- employee training
- recordkeeping and reporting

The HMMP will be developed and implemented before the start of construction. The program will be revised and updated as required in a timely manner and employees will be trained and the program will be implemented before the start of commercial operation.

Hazardous Material Handling and Storage

The hazardous materials used for construction will be typical of most construction projects of this type. Such materials will include gasoline, diesel fuel, oils, lubricants, solvents, detergents, degreasers, paints, ethylene glycol, and welding materials/supplies. All hazardous materials would be stored on-site in vessels/containers that are specifically designed for the characteristics of the materials to be stored; as appropriate, the storage facilities would include secondary containment. Prior to construction, a Hazardous Material Management Program (HMMP) will be developed and implemented. At a minimum the HMMP will include procedures for:

- Hazardous materials handling, use, and storage
- Emergency response
- Spill control and prevention
- Employee training
- Recordkeeping and reporting

Limited quantities of hazardous materials will be used and stored on-site for operation and maintenance. These materials will include oils, lubricants, paints, solvents, degreasers and other cleaners, FM200 fire suppressant, and transformer mineral oil. With the exception of the dielectric oil contained in the transformers, other hazardous materials will be stored in the O&M building. Flammable materials, such as paints and solvents, will be stored in flammable material storage cabinets with built-in containment sumps. The remainder of the materials will be stored on shelves, as appropriate. Due to the quantities involved, the controlled environment, and the concrete floor of the O&M building, a spill will be able to be cleaned up without adverse environmental consequences.

When depleted or used, limited quantities of the hazardous materials may require disposal as hazardous waste. Typical hazardous solid and liquid waste streams generated during operations may include empty containers, spent batteries, oil sorbent and spent oil filters, oily rags, and used hydraulic fluid, oils, and grease. To the extent feasible, these wastes will be recycled; only permitted and licensed recycling facilities will be used. If recycling is not possible, some hazardous solid wastes may be disposed of at a permitted and licensed treatment and/or disposal facility. All hazardous wastes shipped off-site for recycle or disposal will be transported by a licensed and permitted hazardous waste hauler.

The proposed solar energy facility would have an emergency response plan which would provide set procedures for employees to follow in the event of an on-site emergency. This plan will be prepared prior to the start of construction.

2.1.3.12 Termination and Restoration of Solar Energy Facility Site

The generating facility's total useful operating life, with appropriate maintenance, repair and component replacement procedures, is expected to be 30 years.

The project would be in operation for at least 30 years, with the possibility of a subsequent re-powering of the project for additional years of operation. If the plant is decommissioned at the end of the expected life span of 30 years or upon its eventual decommissioning, whenever that occurs, Applicant or its successor in interest would be responsible for the removal, recycling, or disposal of all solar arrays, inverters, transformers and other structures on the site. Applicant anticipates using the best available recycling measures at that time of decommissioning.

The proposed project would be constructed with numerous recyclable materials, including glass, semi-conductor material, steel, and wiring. When the project reaches the end of its operational life, the component parts would be dismantled and recycled. All waste resulting from the decommissioning of the facility would be transported by a certified and licensed contractor and taken to a landfill/recycling facility in accordance with all local, State and federal regulations. Decommissioning would include the following:

- The facility would be disconnected from the utility power grid.
- Individual PV panels would be disconnected from the on-site electrical system.
- Project components would be dismantled and removed using conventional construction equipment an drecycled or disposed of safely.
- Individual PV panels would be unbolted and removed from the support frames and carefully packaged for collection and return to a designated recycling facility for recycling and material re-use.
- Electrical interconnection, transmission, and distribution cables would be removed and recycled offsite by an approved recycling facility.
- PV Panel support steel and support posts would be removed and recycled off-site by an approved metals recycler.
- Electrical and electronic devices, including inverters, transformers, panels, support structures, lighting fixtures, and their protective shelters would be recycled off-site by an approved recycler.
- All concrete used for the substation and underground distribution system would be recycled off-site by a concrete recycler or crushed on site and used as fill material.
- Fencing would be removed and recycled off-site by an approved metals recycler.
- Gravel roads would be removed; filter fabric would be bundled and disposed of in accordance with all applicable regulations. Road areas would be backfilled and restored to their natural contour.
- Soil erosion and sedimentation control measures would be re-implemented during the decommissioning period and until the site is stabilized.
- All permits related to decommissioning would be obtained where required.

The applicant has obtained leases from the current owners of the solar energy facility site. These leases require the applicant to restore the land to its current agricultural use at the end of the project term. Minimal grading and/or topsoil removal and disturbance is anticipated in order to construct the Solar Energy Sites. A majority of the construction would involve placement of footings for the solar panels, minimizing ground disturbance, which ultimately would facilitate conversion of the site back to agricultural uses at the end of the 30-year lease agreement.

2.1.3.13 Project Operations Trip Generation

Due to the limited workforce for operations (four full-time personnel), approximately 4-10 average daily trips would be generated by the facility (2 shifts – 1 security guard working 12 hours then next security guard working 12 hours and 2 maintenance workers, occasionally a few additional maintenance workers for major maintenance and repairs).

2.1.4 Description of Transmission Line

2.1.4.1 Facilities Description

A. Overview

The proposed solar energy facility would be located approximately five miles northwest of the existing Imperial Valley Substation. The solar energy facility would interconnect to the utility grid at the 230 kV side of the Imperial Valley Substation. The Imperial Valley Substation is located within federal lands managed by the BLM; therefore, the project requires Right-of-Way (ROW) approval from the BLM. Title V of the Federal Land Management Policy Act provides the Bureau of Land Management authorization to grant rights-of-way. Specifically, Section 501(a)(4) includes, "systems for generation, transmission, and distribution of electric energy…"

The Proposed Action includes a 120-foot-wide ROW extending from the southeastern boundary of the solar energy facility site, along BLM land, to the Imperial Valley Substation in order to accommodate the transmission interconnection.

To obtain the ROW approval, CSOLAR submitted a "Standard Form-299 Application for Transportation and Utility Systems and Facilities on Federal Lands" to the BLM. The proposed ROW would be within Utility Corridor "N" of the BLM's California Desert Conservation Area Plan (the Desert Plan) (see Figure 3-4). This corridor is currently used for high voltage electricity transmission.

B. Proposed and Alternative Transmission Line Facilities

Proposed Transmission Facility

Under the Proposed Action, the route of the transmission line would be located in Township 16 ½ South, Range 12 East, Section 3 and Township 16 South, Range 12 East, Section 34, 33, 32, 30 and 19 in the Yuha Basin in the Colorado Desert in the southwestern portion of Imperial County, California, about 8 to 9 miles west of the town of El Centro. More specifically, the project proponent is requesting right of way adjacent to the preferred alternative for IID's proposed 230 kV Dixieline to Imperial Valley Substation interconnection. The proposed IID 230 kV Dixieline application request for grant of right of way approval is currently under BLM review. The project proponent desires to share an access road with IID, assuming that the proposed IID 230 kV Dixieline is approved and constructed, to minimize impacts to BLM land. However, if the IID

Dixieline is not approved, then the Proposed Action would involve construction of an access road in this area. The 230kv transmission line would run Southeast starting at Township 16 South Range 12 East in the southwest quarter of the southwest quarter of section 19 heading from the northwest corner to the southwest corner of section 30, catching the northeast quarter of the northeast quarter of Section 31, thence diagonally from the northwest quarter of the northwest quarter to the southeastern quarter of the northeast quarter of section 32 and then through the middle of Section 33, and then through the southwest quarter of the southwest quarter of Section 34 and then to the northern portion of Section 3 Township 16 ½ South Range 12 East. The ROW acreage requested totals 69.9 acres, and is shown per section in the table below.

Section	Acreage
3	5.7
34	4.8
33	16.1
32	15.8
31	1.3
30	17.3
19	9.0
Total	**69.9**

Although a total of 69.9 acres of right-of-way is being requested, a majority of this right-of-way will not be disturbed. Total disturbance (including both temporary and permanent ground disturbance) ranges between 12.9 and 13.6 acres, depending on the alternative, as shown in Section 2.2 Project Alternatives. This area of disturbance includes all proposed access roads, pull sites, towers/poles and all other ground disturbing activities.

The Proposed Action would involve the construction of a 230-kV transmission line extending from the north side of the existing Imperial Valley Substation northwest approximately 5.0 miles. The support structures would consist of either monopoles or steel lattice towers from the solar energy facility site south to the Imperial Valley Substation. The monopoles or towers would be erected on the centerlines of the ROW. The monopoles would be spaced approximately 600-800 feet apart or towers would be spaced 900 to 1,150 ft apart. The selection of poles or towers will be determined by IID's selection of poles or towers. The towers/poles will be roughly in line with the proposed IID Dixieland line's poles/towers. When the circuit gets within 1,000 feet of the Substation, the towers will switch to monopoles. The towers and the poles are referred to by consecutive numbers from south to north; Tower No. 26 would be the first tower south of the solar farm site and Tower No. 1 would be just north of the IV Substation. Similarly, the steel monopoles are referred to by consecutive numbers from south to north and the galvanized steel poles along the line begin numbering with the first pole out of the Imperial Valley Substation and continue running north to the Solar Farm. The transmission line may have to be undergrounded as it enters the Imperial Valley Substation to avoid conflicts with existing and proposed transmission lines in the area.

C. Estimated Disturbance Area in the Yuha MA

Interconnection routes were analyzed with an emphasis on providing the smallest disturbance footprint. The project proponent initially researched the possibility of using Southwest Powerlink's existing access road and then attempted to use Sunrise Powerlink's access road when Sunrise was proposed north of the Southwest Powerlink. However, due to the size and safety requirements of a 500 kv line versus a 230 kv line, the project proponent was unable to stay close enough to Sunrise Powerlink to reduce impacts by sharing an access road. The project proponent has instead, proposed several alternative routes which cluster its transmission gentie in the same vicnity as other constructed or proposed routes to maintain aesthetics and reduce impacts to larger areas that have never been disturbed with transmission lines.

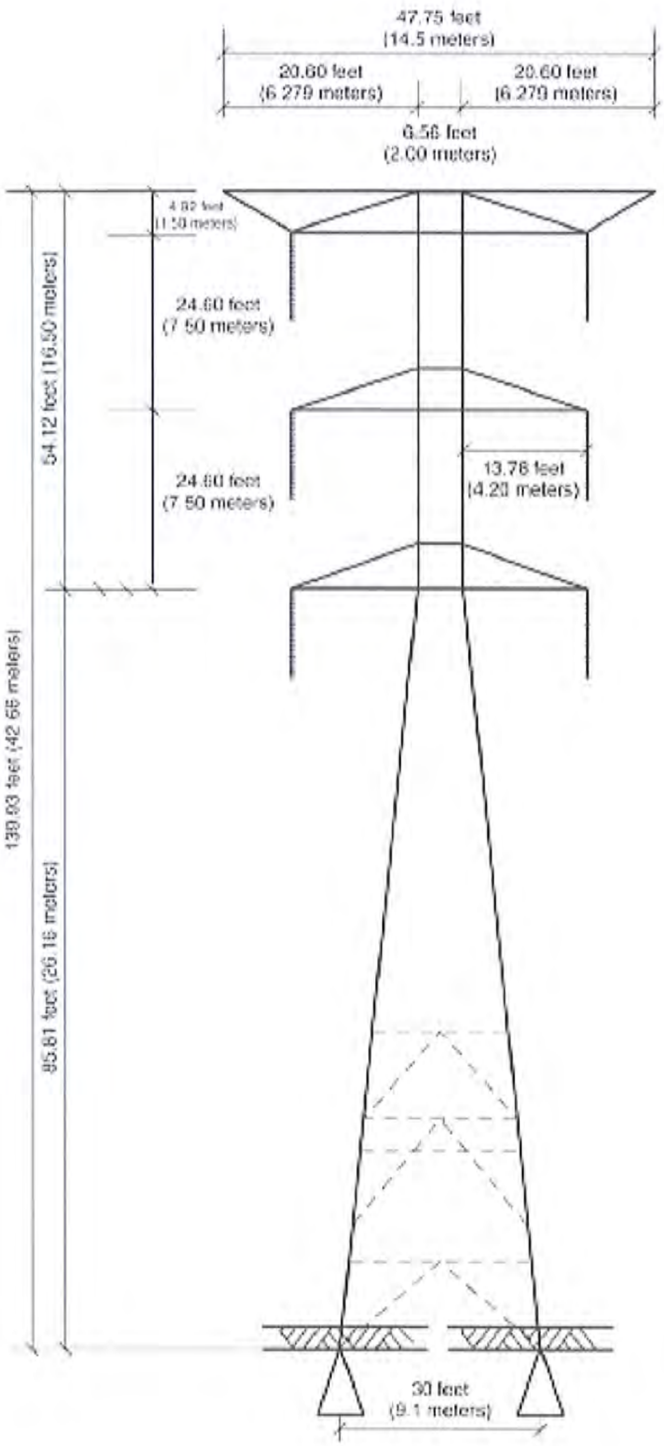
Areas of permanent impact would be those areas where the surface of the ground would be permanently disturbed. Specifically, permanent impacts would occur where new access roads and footings or anchors for tower, monopole, or crossing structures are constructed. Temporary impacts would occur in areas where construction activity takes place but where restoration of the surface is possible. These areas would include the work areas used to erect the towers, monopoles or crossing structures, pull sites, and lay-down areas for the monopoles. Total disturbance (including both temporary and permanent ground disturbance) ranges between 12.9 and 13.6 acres, depending on the alternative, as shown in Section 2.2 Project Alternatives.

2.1.4.2 Construction Process – Transmission Line

Construction would begin with site preparation, consisting of grading of access roads and drilling or excavation for support structures and footings. Support structures would be fabricated in segments by the same vendor. In order to minimize the amount of lay-down area required, lattice towers and structures or poles may be carried to the construction site by helicopter depending on conditions at tower locations. All lay-down/staging areas would be on private land (i.e., the solar energy facility site). Monopoles would be brought to the site by truck in sections, assembled in lay-down/staging areas located within the solar energy facility site, and lifted into place with a crane. Principal preparation at each support structure location would consist of preparing concrete foundation footings. Each tower would require four footings, one on each corner. A single footing would be needed for each monopole.

Three types of steel lattice transmission towers and two types of steel monopoles would be used, depending on function. The three types of steel lattice towers are suspension, deflection, and dead-end. The two types of steel monopoles are suspension and deflection. Suspension towers (or monopoles) are used where cables are strung in a straight line from one tower to an adjacent one (Figures 2-15 and 2-16). Deflection towers (or monopoles) are used where transmission lines turn gradual angles (Figures 2-17 and 2-18) and dead-end lattice towers are used where transmission lines turn large angles or where a transmission line is brought into an electric substation (Figure 2-19). Suspension, deflection and dead-end towers are about 140 feet high, while both deflection and suspension monopoles are about 100 feet high.

Conductors (wires) on the dead-end and deflection towers or poles would be supported by double insulators. Conductors on suspension towers or poles would be supported by single insulators. The minimum ground clearance of the conductor would be 36 feet. The average horizontal distance between circuits for phase conductor spacing on steel lattice suspension and deflection towers would be approximately 35 feet. For dead-end steel lattice towers, the distance would be about 50 feet. The horizontal distance between phases on the steel monopoles would be about 26 feet for the suspension monopole and 38 feet



SOURCE: Development, Design & Engineering, Inc., 2010

10/18/10

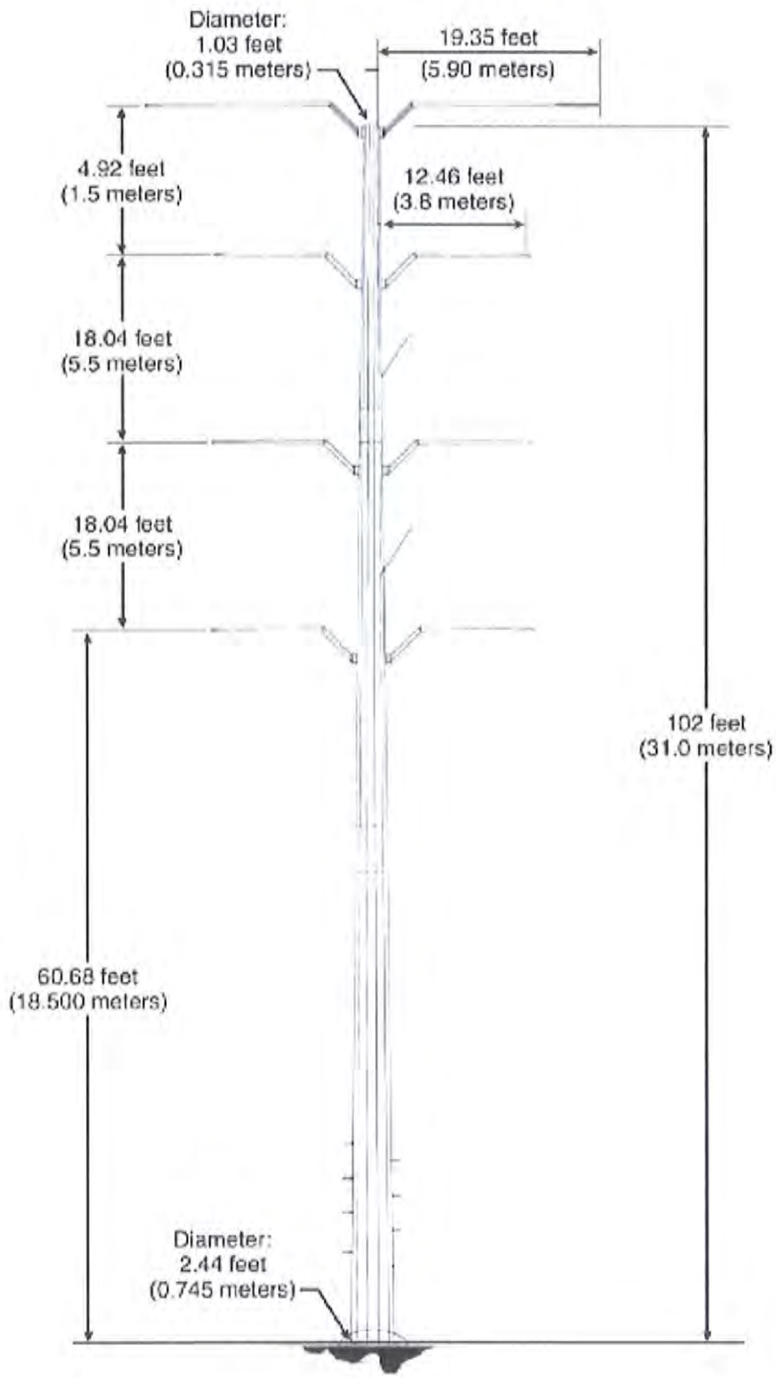
BRG CONSULTING, INC.

Imperial Solar Energy Center West

Typical Suspension Tower

FIGURE 2-15

F:\projects\1008 Imperial Solar West\2nd Screencheck EIR_EA\Chapter 2\Figure 2-15 Typical Suspension Tower.ai



SOURCE: Development, Design & Engineering, Inc., 2010

10/18/10

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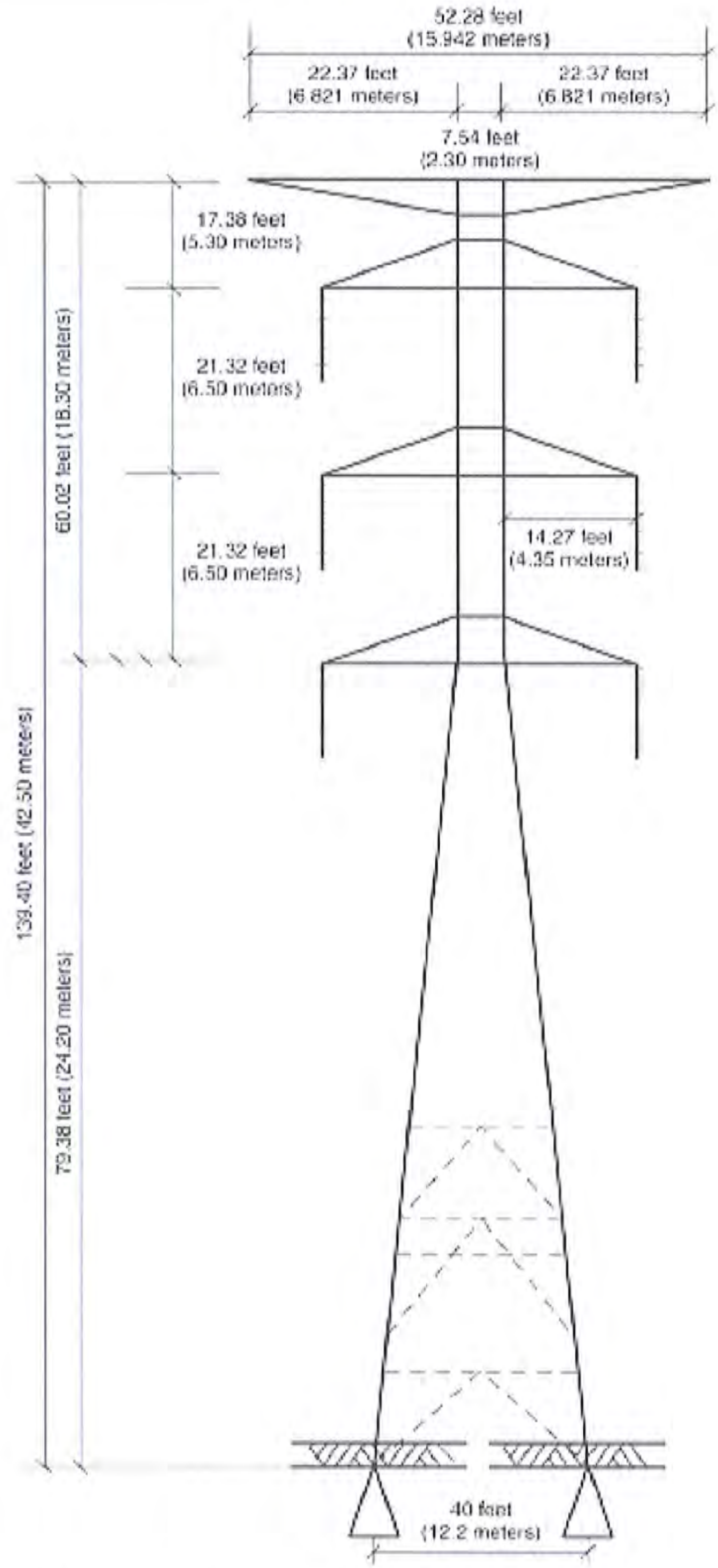
Imperial Solar Energy Center West

Monopole

FIGURE 2-16

F:\projects\1008 Imperial Solar West\2nd Screencheck EIR_EA\Chapter 2\Figure 2-16 Monopole.ai



SOURCE: Development, Design & Engineering, Inc., 2010

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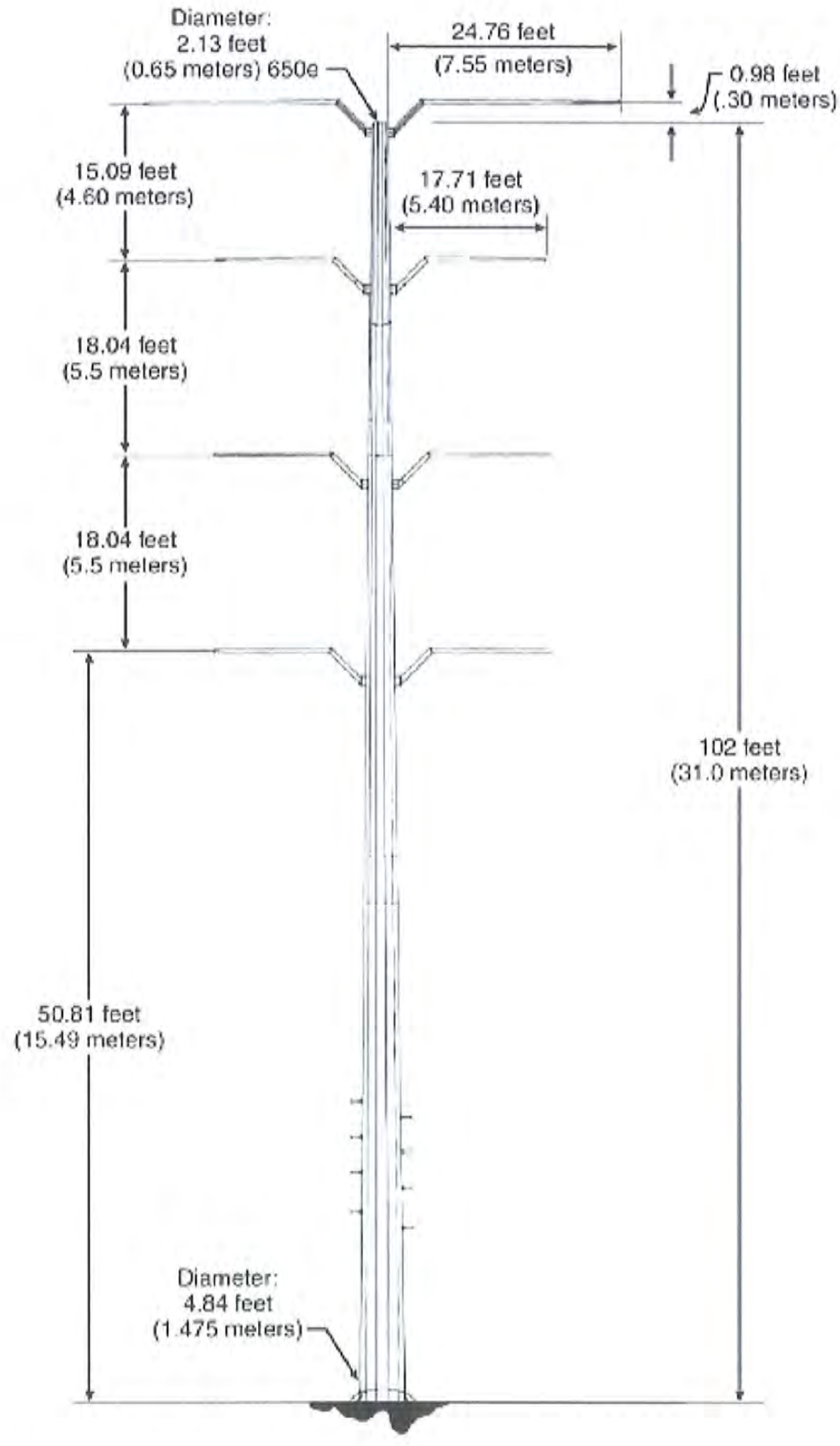
Deflection Suspension Tower

FIGURE

2-17

F:\projects\1008 Imperial Solar West\2nd Screencheck EIR_EA\Chapter 2\Figure 2-17 Deflection Suspension Tower.ai



SOURCE: Development, Design & Engineering, Inc., 2010

10/18/10

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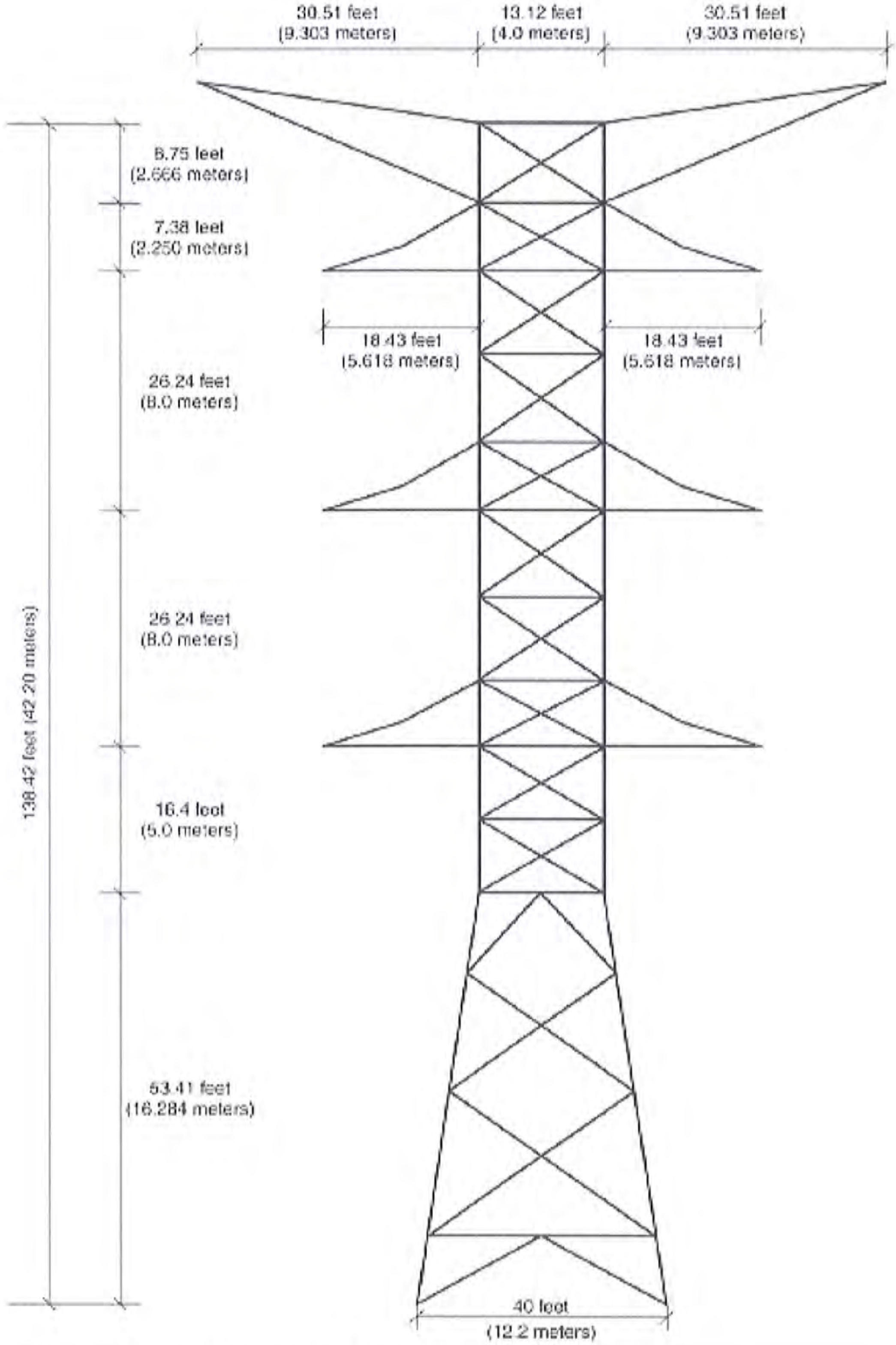
Imperial Solar Energy Center West

Deflection Monopole

FIGURE

2-18

F:\projects\1008 Imperial Solar West\2nd Screencheck EIR_EA\Chapter 2\Figure 2-18 Deflection Monopole.ai



SOURCE: Development, Design & Engineering, Inc., 2010

10/18/10

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Imperial Solar Energy Center West

Dead End Tower

FIGURE 2-19

F:\projects\1008 Imperial Solar West\2nd Screencheck EIR_EA\Chapter 2\Figure 2-19 Dead End Tower.ai for the deflection monopole. Vertical spacing between phases on a steel lattice tower would be between 21 feet and 26 feet, depending upon the tower type. Vertical spacing between phases on steel monopoles would be 18 feet for both monopole types.

The electrical circuit consists of three phases with one unbundled conductor making up each phase. A static ground wire would be located at the top of each support structure. The static ground wire would provide communications, system protection and monitoring. The ground static wire would include the installation of communications fiber for system protection and monitoring, with additional black fiber for future communications use.

The towers would be anchored to concrete foundations at each of the four corners at the base of the tower. The tower base dimensions would range from approximately 30 feet by 30 feet for suspension towers to 40 feet by 40 feet for the deflection and dead-end towers. At the top, the suspension towers would be approximately 6.6 feet square, the deflection towers would be approximately 7.5 feet square and the dead-end towers would be approximately 13 feet square.

Steel suspension monopoles would be approximately 2.5 feet in diameter at the base, tapering to approximately 1 foot in diameter at the top. Steel deflection monopoles would be approximately 4.8 feet in diameter at the base, tapering to approximately 2.1 feet at the top. Steel monopoles would be anchored to a concrete foundation.

Once support structures are in place, conductors would be strung for the entire length of the transmission lines from the northernmost support structure at the substation. Truck-mounted cable-pulling equipment would be used to string the conductors on the support structures. Cables would be pulled through one segment of a transmission line, with each segment containing several towers or poles. To pull cables, truck-mounted cable-pulling equipment would be placed alongside the tower or monopole directly beneath the cross-arm insulators (the "pull site") at the first and last towers or poles in the segment of the transmission line. The conductors would be pulled through the segment of line and attached to the insulators. Then, the equipment would be moved to the next segment with the "front-end" pull site just used becoming the "back-end" pull site for the next segment.

Construction would be completed by restoring disturbed ground surfaces to original contours. Spoil dirt excavated for the footings would be spread on the ground, on access roads, or taken off site for disposal in a permitted disposal site.

Depending on the final engineering design near the Imperial Valley Substation, portions of the transmission line closest to the Imperial Valley Substation may need to be trenched underground, rather than traveling on above ground transmission poles. Trenching underground reduces the impacts that this project's transmission lines may have on other existing or planned transmission lines.

The proposed transmission lines will be constructed in accordance with BLM's administration of the flat-tailed horned lizard protection program. Construction of the transmission lines would involve setting foundations, which would require the movement of equipment along the routes, as well as the potential placement of the steel lattice towers by helicopter. The primary equipment to be used in setting foundations would be cement trucks, pickup trucks and small construction equipment such as backhoes and skip loaders for excavation. The amount of fugitive dust generated by these sources would depend upon several factors. However, the dust generated by entrainment on vehicle wheels is typically temporary in nature and settles in the immediate vicinity. Such fugitive dust emissions would not materially affect ambient PM10 levels in the project region.

Water sprayed from truck-mounted equipment would be used sparingly for dust control at access roads, work areas and when helicopters would be in use at tower sites. Any impacts would be temporary in nature.

Construction equipment, as well as vehicle traffic associated with the movement of construction workers to and from the site, would also cause air emissions resulting from the combustion of fuel. However, the number of construction equipment vehicles to be used on site and the relatively small number of total construction workers commuting to and from the general project site were not expected to result in a substantial impact on air quality. Any air quality impacts associated with this vehicular traffic would also be temporary in nature.

Worker trips, construction crew and vehicular requirements are estimated below:

Towers

Foundation Installation:

Drilling Rig	(1) Operator
Boom Truck	(1) Operator
Flat Bed Truck	(1) Operator
Crew Truck(s)	(5) Crew
Concrete Truck	(1) Driver/Operator

Tower Erection:

Bucket Truck	(1) Driver/Operator
Boom Truck	(1) Driver/Operator
Crew Truck(s)	(6) Lineman/Groundman
Helicopter Support	(1) Spotter

Wire Stringing – Construction:

Truck (Puller)	(2) Driver / Operator
Truck (Tensioner)	(2) Driver / Operator
Crew Truck	(6) Lineman/Groundman
Crew Truck	(3) Spotter (along line section)

Pole Locations and Access

Vehicular access is necessary to all structure sites to shuttle crews and to stage equipment for construction phases. Estimated minimum equipment and personnel for pole sites:

Foundation Installation:

Drilling Rig	(3) Driver / Operator / Support
Crane	(2) Driver / Operator
Boom Truck	(1) Operator
Flat Bed Truck	(1) Operator
Crew Truck(s)	(6) Crew
Concrete Truck	(1) Driver/Operator (1 at site, 1+ staged)

Pole Erection:

Bucket Truck	(2) Driver/Operator
Crane	(3) Driver / Operator / Support
Boom Truck	(1) Driver/Operator
Crew Truck(s)	(6) Lineman/Groundman
Helicopter Support	(1) Spotter

Wire Stringing:

Truck (Puller)	(2) Driver / Operator
Truck (Tensioner)	(2) Driver / Operator
Crew Truck	(6) Lineman/Groundman
Crew Truck	(3) Spotter (along line section)

C. Construction Schedule – Transmission Line

Tower erection requires that all tower foundations are complete and that concrete has cured sufficient to support the tower without conductors attached. Wire stringing requires that all foundations are cured to design specifications. All poles must be erected and foundations cured to design specifications for wire stringing to occur. Aside from minimal site surveying and intermittent site visits during the design phase, on-site activity is estimated as follows:

Construction Surveying	15 Working Days
Foundation Installation	45 Working Days
Tower Assembly	35 Working Days
Tower Erection	5 Working Days
Pole Erection	15 Working Days
Wire Stringing	20 Working Days

Adjusting for construction sequence and overlap of activities, on-site presence is expected to be approximately 17 weeks. Concurrent activities peak during foundation installation and tower assembly. The helicopter movement generally would cause some dust to be generated by downwash from the rotor blades. Such dust generation is similar to that from wind erosion and would be expected to cause entrainment of the loose surface material. The amount of dust generated would be small and would impact only the localized area near the tower base. The projects area is mostly uninhabited desert. However, to control dust, small quantities of water would be sprayed in the area surrounding the tower locations, as mitigation. Application of water could encourage non-native invasive plant species to grow and would be used minimally.

2.1.4.3 Operations and Maintenance of Transmission Lines

Operations and maintenance requirements for transmission lines are limited. Operations and maintenance activities would include, but not necessarily be limited to, the following:

(1) Yearly maintenance grading of access roads

(2) Insulator washing

(3) Monthly on-ground inspection of towers, poles, and access roads by vehicle

(4) Air or ground inspection as needed

(5) Repair of tower or pole components as needed

(6) Repair or replacement of lines as needed

(7) Replacement of insulators as needed

(8) Painting pole or tower identification markings or corroded areas

(9) Response to emergency situations (e.g., outages) as needed to restore power.

For most of these operations, equipment could use the access roads and no significant additional disturbance would occur. Transmission line conductors may occasionally need to be upgraded or replaced over the life of the line. Old cables would be taken down and new cables would be strung on the insulators in an operation similar to the cable-pulling operation used to initially install the conductors.

2.1.4.4 Termination and Restoration – Transmission Corridor

Restoration will be completed upon termination of construction in temporary use areas. Permanent restoration will be completed upon expiration of the right-of-way term. The disturbed surfaces will be restored to the approximate original contour of the land surface.. Appropriate site-specific vertical mulching techniques and contouring will be used where conditions vary. Salvaged native plants will be used for re-vegetation, if appropriate, along with seeding using BLM-recommended seed mixes.

Preferably, seed will be planted between the months of November and January following transmission line construction. Seed will be planted using drilling, straw mulching or hydro-mulching as directed by the BLM.

2.1.5 Intended Uses of the EIR/EA/Authorizing Actions

2.1.5.1 Discretionary Actions and Approvals by the County of Imperial

County of Imperial

In conformance with Sections 15050 and 15367 of the State CEQA Guidelines, the County of Imperial has been designated the "lead agency," which is defined as, "the public agency which has the principal responsibility for carrying out or approving a project." The following identifies the discretionary actions and approvals by the County of Imperial Planning Commission and/or Board of Supervisors for the Proposed Action.

1. *Conditional Use Permit (CUP #10-0012).* The Proposed Action would require approval of a Conditional Use Permit by the County of Imperial that would allow for the construction and operation of the proposed solar power plant on the solar energy facility site which consists of nine privately-owned (i.e. located outside of BLM lands) legal parcels zoned A-2 (General Agriculture), A-2-R (General Agricultural Rural Zone), and A-3 (Heavy Agriculture). Pursuant to the County's Land Use Ordinance, Title 9, Division 5, Chapters 8 and 9, "Solar Energy Plants" is a use that is permitted in the A-2, A-2-R, and A-3 Zones, subject to securing a conditional use permit. ("Transmission lines, including supporting towers, poles, microwave towers, utility substations" are permitted uses within these zones.)

2. *Site Plan*. Site Plan and Architectural Review is required for all non-residential projects.

3. *Variance (V10-0007).* A variance is required for the solar energy facility site in order to exceed the height limit for transmission towers within the A-2, A-2-R, and A-3 Zones. The existing A-2, A-2-R, and A-3 zones allow a maximum height limit of 120-feet; whereas, transmission towers of up to 140 feet in height are proposed. This variance applies only to the towers that would be located within the private lands under the jurisdiction of the County of Imperial.

4. Certification of the Final EIR. After the required public review for the Draft EIR, the County of Imperial will respond to written comments, edit the document, and produce a Final EIR to be certified by the Planning Commission and/or Board of Supervisors prior to making a decision on the project.

Additionally, the project will involve issuance of other permits and approvals necessary and desirable to implement the project including such things as building permits, grading permits, and septic system permits.

Bureau of Land Management

1. BLM *Grant of Right-of- Way (BLM Right-of-Way CACA-51644).* The project will require approval by the Bureau of Land Management (BLM) of a grant of right-of-way in order to allow the construction and operation of the proposed transmission lines within the Federal Lands managed by the BLM. The transmission lines would interconnect from the project site (the solar facility) to the Imperial Valley (IV) Substation.

Department of Energy

1. *Grant of Loan Guarantee.* The Department of Energy's (DOE's) proposed action is to issue a loan guarantee to CSOLAR Development LLC for construction and startup of the Imperial Solar Energy Center (ISEC) South and West facilities in Imperial County, California.

2.1.5.2 Subsequent/Concurrent Entitlements to Implement the Proposed Action

A variety of entitlement actions and discretionary permits will be required from the County of Imperial to implement the components of the Proposed Action:

- Grading Plan for the project site and roadways
- Construction Traffic Control Plan
- Building Permits
- Encroachment Permits from the County of Imperial Public Works Department for access to the lot(s) and for any proposed road crossings.

2.1.5.3 Discretionary Actions and Approvals by Other Agencies

Responsible Agencies are those agencies that have discretionary approval over one or more actions involved with development of the Proposed Action site. Trustee Agencies are state agencies that have discretionary approval or jurisdiction by law over natural resources affected by a project. These agencies may include, but are not limited to the following:

A. Imperial County Fire Department – approval of final design of the proposed fire system.

B. California Department of Transportation – encroachment permit.

C. California Regional Water Quality Control Board – Notice of Intent, water quality certification.

D. California Department of Fish and Game (Trustee Agency) – endangered species act compliance, burrowing owl mitigation.

E. U.S. Army Corps of Engineers – Clean Water Act Section 404 Nationwide Permit

F. U.S. Fish and Wildlife Service – Endangered Species Act compliance

G. Imperial Irrigation District – Encroachment permit

H. Imperial County Air Pollution Control District – Rule 801 compliance

2.2 Project Alternatives

This EIR/EA evaluates a total of five alternatives – the Proposed Action, Alternative 1-Alternative Transmission Line Corridor, Alternative 2-Alternative Transmission Line Corridor, Alternative 3-Reduced Solar Energy Facility Site, and Alternative 4-No Action/No Project Alternative. The Proposed Action, Alternative 1-Alternative Transmission Line Corridor, Alternative 2-Alternative Transmission Line Corridor, and Alternative 3-Reduced Solar Energy Facility Site would meet the basic objectives of the proposed project.

2.2.1 Proposed Action

The Proposed Action for the transmission line corridor and solar energy facility site is described in detail in Section 2.1.4. The alignment of the transmission line under this alternative is shown on Figure 2-20. The Proposed Action parallels the proposed IID Dixieland corridor to the proposed IID substation north of the Imperial Valley Substation proposed route. This alternative would enable the CSolar (the project proponent) and IID to share an access road and minimize disturbance to the Yuha Desert. The alternative would not traverse private land. Also, it would minimize impacts to U.S. Army Corps of Engineers jurisdictional waters (non-wetland waters of the U.S.) as well as cultural resources sites.

The estimated areas of impact, permanent and temporary, within BLM lands from construction of the Proposed Action are as follows:

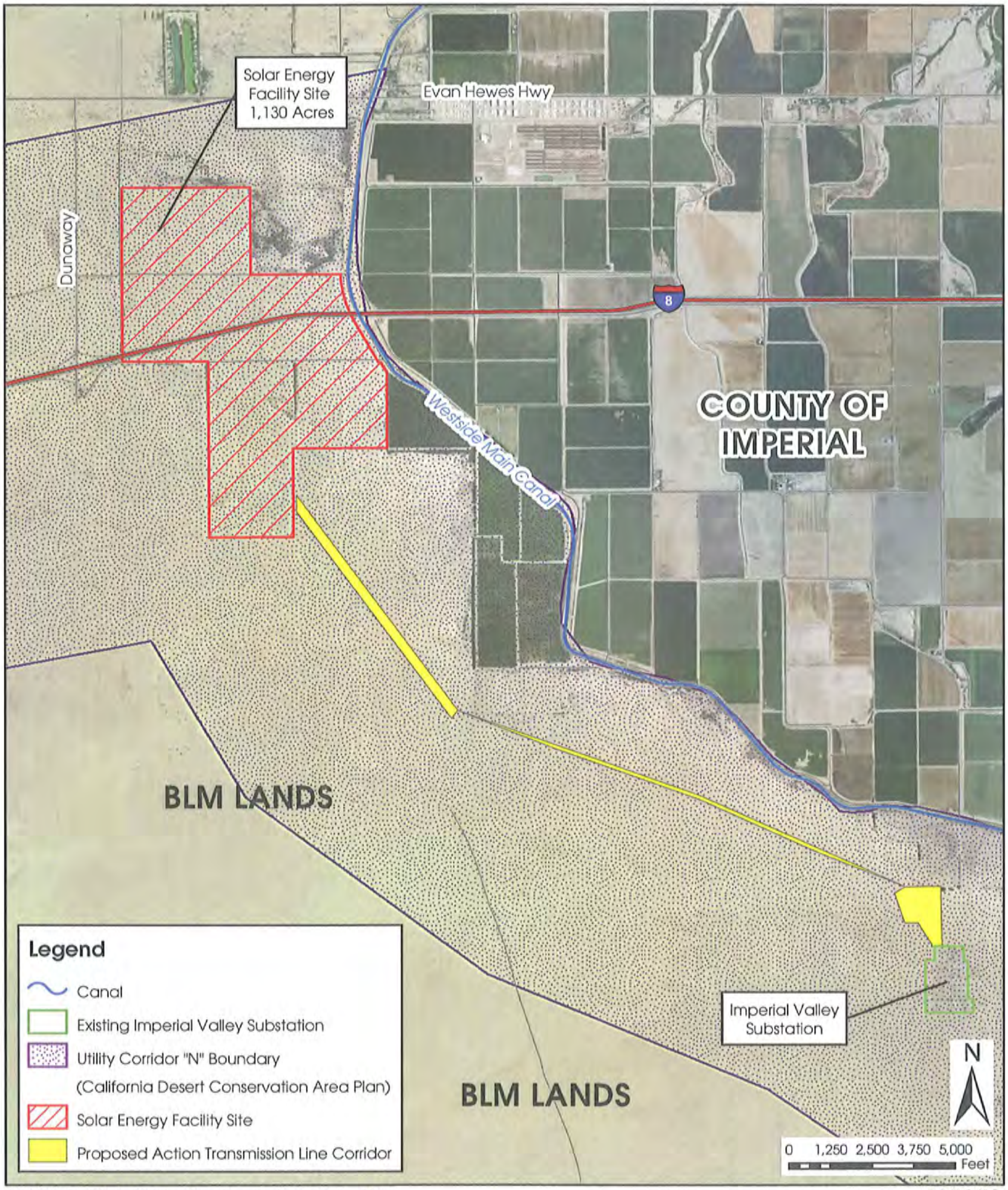
Proposed Action Areas of Disturbance (Acres)* within BLM Lands

Vegetation Communities/Land Cover Types	Proposed Action
Permanent Impacts	
Inside FTHL MA	
Access Roads	6.8
Monopole Footings	<0.1
Lattice Tower Footings	--
Permanent Impacts Total	6.8 Acres
Temporary Impacts	
Inside FTHL MA	
Pullsite	0.1
Monopole work areas	6.8
Lattice tower work areas	--
Temporary Impacts Total	6.9 Acres
TOTAL	13.7

2.2.2 Alternative 1-Alternative Transmission Line Corridor

Alternative 1-Alternative Transmission Line Corridor for the transmission line is a variant of the Proposed Action and is shown on Figure 2-21. This alternative would be similar to the Proposed Action for a majority of the alignment; however, it would be routed through two private parcels, should an easement be granted.

The estimated areas of impact, permanent and temporary, within BLM lands from construction of the Alternative 1-Alternative Transmission Line Corridor are as follows:



SOURCE: ESRI, 2010; BRG Consulting, Inc., 2010 10/18/10

BRG CONSULTING, INC.

Imperial Solar Energy Center West

Proposed Action

FIGURE 2-20

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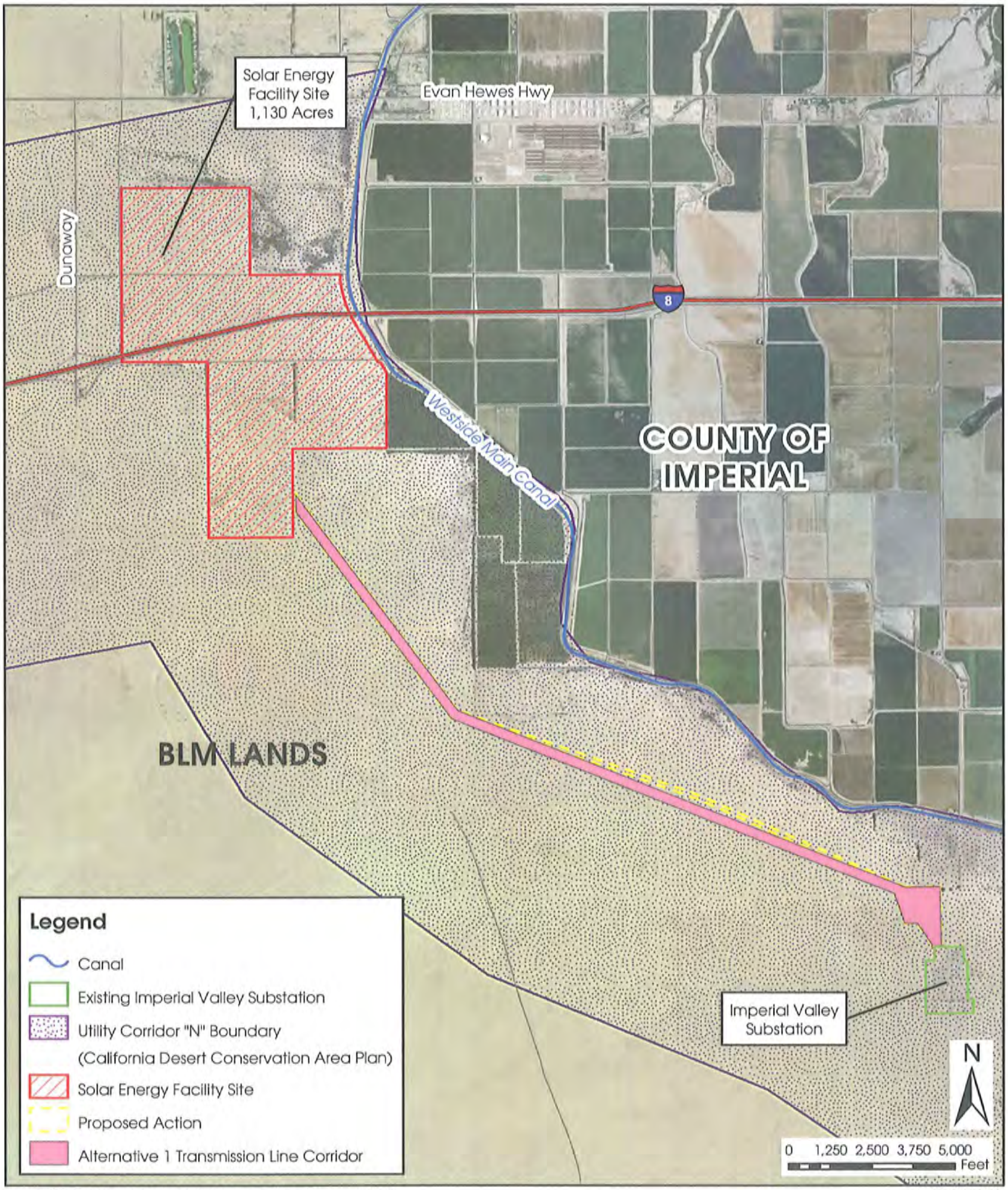

SOURCE: ESRI, 2010; BRG Consulting, Inc., 2010

10/18/10

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Imperial Solar Energy Center West

Alternative 1 (Alternative Transmission Line Corridor)

FIGURE 2-21

F:\projects\1008 Imperial Solar West\2nd Screencheck EIR_EA\Chapter 2\Figure 2-21 Alt 1.mxd

Alternative 1 Areas of Disturbance (Acres)* within BLM Lands

Vegetation Communities/Land Cover Types	Proposed Action
Permanent Impacts	
Inside FTHL MA	
Access Roads	6.8
Monopole Footings	<0.1
Lattice Tower Footings	--
Permanent Impacts Total	6.8 Acres
Temporary Impacts	
Inside FTHL MA	
Pullsite	0.4
Monopole work areas	6.4
Lattice tower work areas	--
Temporary Impacts Total	7 Acres
TOTAL	13.8

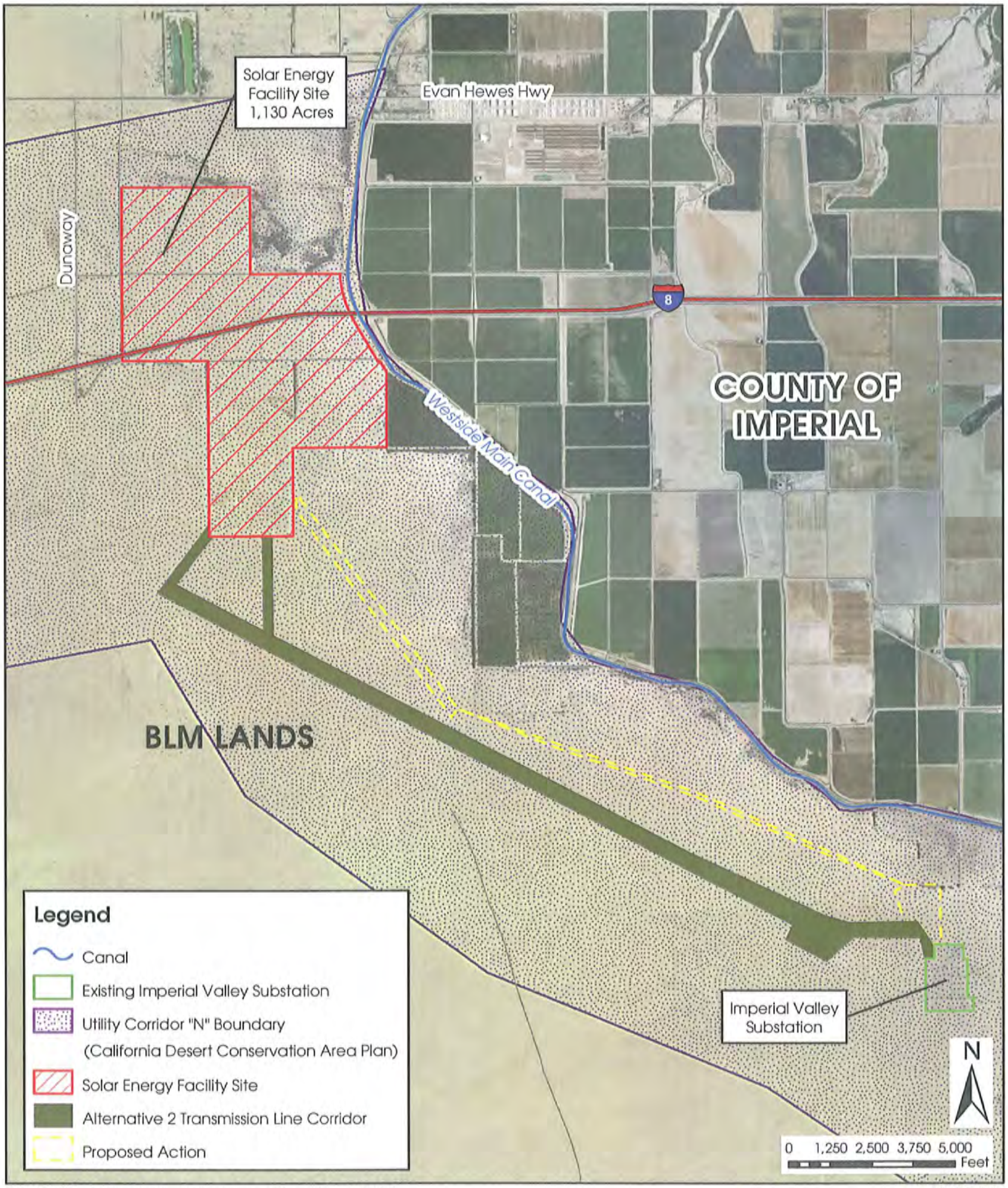
2.2.3 Alternative 2-Alternative Transmission Line Corridor

Alternative 2-Alternative Transmission Line Corridor is shown on Figure 2-22. This alternative would be located further west than the Proposed Action. This route parallels the proposed Sunrise Powerlink, Southwest Powerlink, and proposed Imperial Valley Solar Gentie.

In the event that the Imperial Valley Solar Gentie is approved, and constructed prior to construction requirements for the Proposed Action, and CSOLAR is able to gain access to use the Imperial Valley Solar Gentie, then this would allow CSOLAR to shorten the Gentie required for the Proposed Action. The estimated areas of impact, permanent and temporary, within BLM lands from construction of the Alternative 2-Alternative Transmission Line Corridor are as follows:

Alternative 2 Areas of Disturbance (Acres)* within BLM Lands

Vegetation Communities/Land Cover Types	Proposed Action
Permanent Impacts	
Inside FTHL MA	
Access Roads	8.4
Monopole Footings	--
Lattice Tower Footings	<0.1
Permanent Impacts Total	8.4 Acres
Temporary Impacts	
Inside FTHL MA	
Pullsite	0.3
Monopole work areas	0.4
Lattice tower work areas	3.8
Temporary Impacts Total	4.5 Acres
TOTAL	12.9



SOURCE: ESRI, 2010; BRG Consulting, Inc., 2010

10/18/10

BRG CONSULTING, INC.

Imperial Solar Energy Center West

Alternative 2
(Alternative Transmission Line Corridor)

FIGURE 2-22

F:\projects\1008 Imperial Solar West\2nd Screencheck EIR_EA\Chapter 2\Figure 2-22 Alt 2.mxd

2.2.4 Alternative 3-Reduced Solar Energy Facility Site

Alternative 3-Reduced Solar Energy Facility Site is considered the environmentally superior alternative as it would reduce the direct impact to sensitive resources located within the solar energy facility site as compared to the Proposed Action. This alternative would reduce the size of the solar energy field by approximately 7 acres and would reduce the energy generation by approximately 3 megawatts. This alternative would involve the same transmission line corridor alignment as the Proposed Action; therefore, impacts within BLM lands would be the same as the Proposed Action (6.9 acres of disturbance total). The characteristics would otherwise be the same as the Proposed Action. This alternative is shown on Figure 2-23.

The estimated areas of impact, permanent and temporary, within BLM lands from construction of the Alternative 3-Reduced Solar Energy Facility Site are as follows:

Alternative 3 Areas of Disturbance (Acres)* within BLM Lands

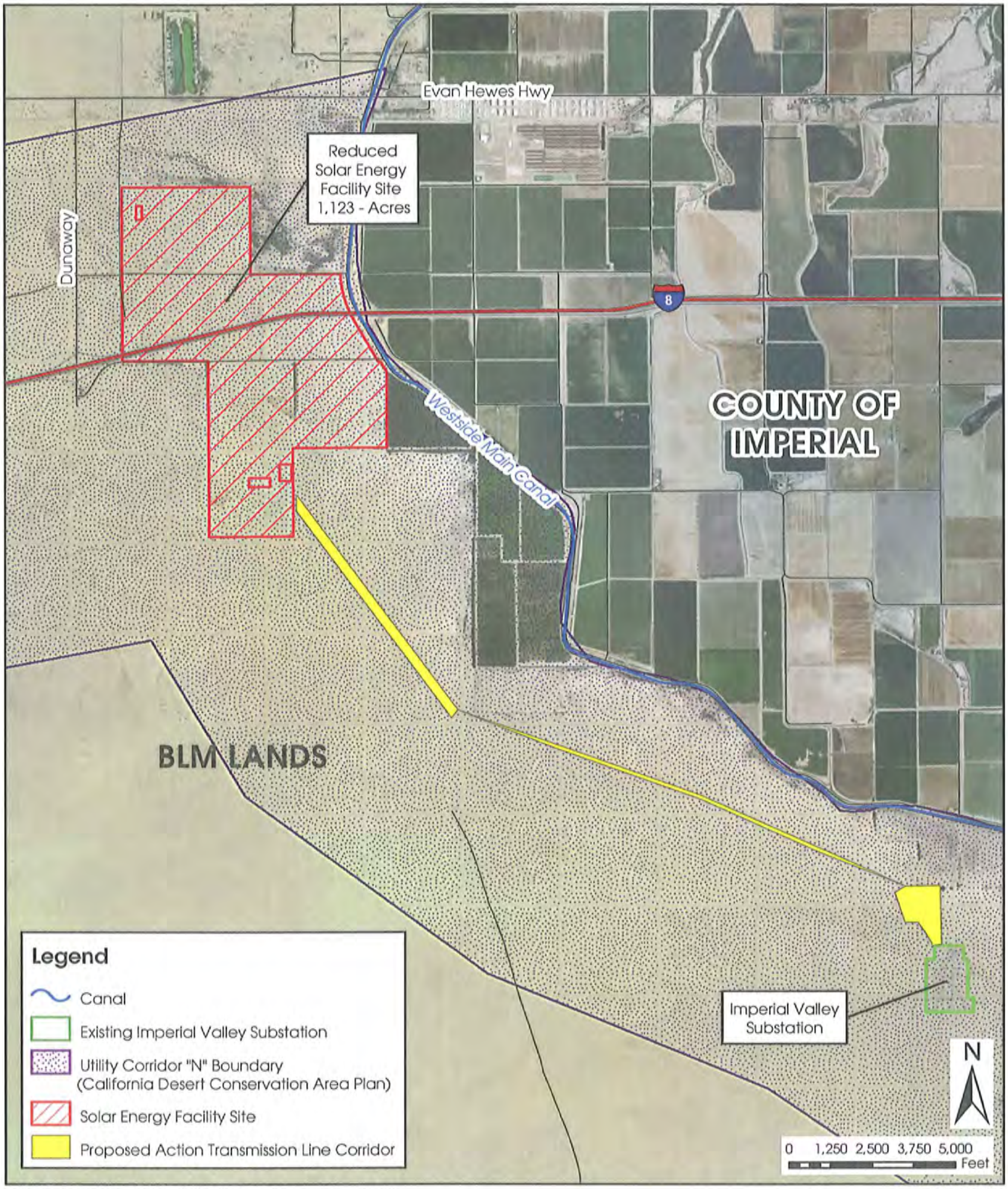
Vegetation Communities/Land Cover Types	Proposed Action
Permanent Impacts	
Inside FTHL MA	
Access Roads	6.8
Monopole Footings	<0.1
Lattice Tower Footings	--
Permanent Impacts Total	6.8 Acres
Temporary Impacts	
Inside FTHL MA	
Pullsite	0.1
Monopole work areas	6.8
Lattice tower work areas	--
Temporary Impacts Total	6.9 Acres
TOTAL	13.7

2.2.5 Alternative 4-No Action/No Project Alternative

This alternative assumes that the solar facility and associated transmission lines would not be constructed. Under NEPA, Alternative 4-No Action/No Project Alternative would be one that does not involve a federal approval. However, the Proposed Action involves the Department of Energy's (DOE's) issuance of a loan guarantee to CSOLAR Development LLC for construction and startup of the Imperial Solar Energy Center (ISEC) South and West facilities in Imperial County, California. Under Alternative 4-No Action/No Project Alternative, DOE would not issue a loan guarantee to CSOLAR Development LLC.

Also, the Proposed Action would need to connect to the existing Imperial Valley Substation, which is located within BLM lands; therefore, it is not possible to traverse BLM lands without a Federal permit/approval.

Finally, under the CEQA No Project, continuation of agricultural use of the solar energy facility portion of the project site could be expected based on the current General Plan and Land Use Ordinance designations



SOURCE: ESRI, 2010; BRG Consulting, Inc., 2010

10/19/10

BRG CONSULTING, INC.

Imperial Solar Energy Center West

Alternative 3
(Reduced Solar Energy Facility Site)

FIGURE 2-23

F:\projects\1008 Imperial Solar West\2nd Screencheck EIR_EA\Chapter 2\Figure 2-23 Alt 3.mxd

of the site for agricultural use; however, the site currently remains fallow and previous agricultural use of the site was not viable due to the soil conditions and amount of water use needed to support the agriculture.

2.2.6 Alternatives Considered but Eliminated from Detailed Analysis

2.2.6.1 Interconnection to the IID "S Line" or Other Interconnection to the IID transmission system (including the "Dixieland" connection).

Solar renewable energy projects typically sell power to an offtaker such as SDG&E, SCE, or PG&E. These three large utilities in California cooperatively manage their transmission systems through the California Independent System Operator (CAISO). CAISO schedules and delivers power through its network on behalf of their member utilities.

Imperial Solar Energy Center is selling power it generates to a CAISO utility. The Imperial Irrigation District does not have a need for solar projects the size of the Proposed Action (as per IID 2009 RFP, IID is seeking up to 20 MWs of solar).

The following outlines why the project is not viable if connected to IID's system:

A. Economic Viability

IID charges fees to projects to wheel their power through their system. These two charges are:

- Firm Point-to-Point Transmission Service Fee: IID's open access transmission tariff (OATT) charges a wheeling charge of $20.28/kw (IID Open Access Transmission Tariff Sheet 127). When taking into account the fact that photovoltaic solar projects typically have a capacity factor of 25%, this tariff alone makes solar projects using IID's network unviable.
- Real Power Losses: IID's OATT Section 15.7 states, "The Transmission Customer is responsible for replacing losses associated with all transmission service as calculated by the Transmission Provider. The applicable Real Power Loss factor is 3%." This means that 3% of the power connected by generators to IID's grid is forfeited to IID.

These two charges increase the cost of power delivered to CAISO by approximately 10% making the project uncompetitive.

B. Physically Impractical

Interconnection to the S Line would require the project to acquire miles of right of way from many private individuals and interfere with existing active agricultural facilities. Transmission lines create a hazardous condition for crop dusters.

The project sponsor has no eminent domain rights and would therefore have to convince many landowners to accept the appraised value for their land. Additionally, the Westside Main Canal is surrounded by soil with high liquefaction potential. IID has previously indicated it would not grant a ROW over land it controlled.

C. Regulatory Barriers

All CAISO offtakers prefer projects that directly interconnect to the CAISO grid because it is easier to schedule and control delivery of the power.

The large investor owned utilities which are members of CAISO place a higher value on projects connected to CAISO because they are required to have a minimum # of power plants directly connected to their system: the CAISO utilities call this 'Capacity Value'. When competitively bidding against other projects desiring to sell power to a CAISO utility, the advantage of being directly connected to their system makes a large impact on the project. (http://www.sce.com/NR/rdonlyres/F3022D9B-DC91-474C-9DA5-761E9FCEF80B/0/20090708_SCE_RFP_Proposal_Conference_Materials.pdf see page 34)

The IID and CAISO have not yet developed standards to allow for intermittent resources (e.g. solar) to move their power from the IID system to the CAISO system. The potential delays and scheduling conflicts have an unquantifiable impact on the project's revenue. Therefore obtaining financing for the project under this scenario would be difficult if not impossible.

D. Lack of Capacity

The line currently lacks the capacity to support a project of this size. Therefore, IID has been planning new transmission facilities in the area; however, none of the facilities have been constructed at this point and these upgrades are dependent on other projects going forward that may or may not be constructed. The IID transmission queue has many projects in the queue that may or may not be viable.

E. Project timing

The project has been in the CAISO transmission queue since January 31, 2010. The project has been studied extensively to develop transmission interconnection plans which align with the project schedule.

In the case of the IID's Dixieland Substation to Imperial Valley Substation Route for interconnection of the West project, this line is only in the planning phases and has not yet been permitted which creates additional project timing risk.

As previously mentioned IID is not able to wheel the power at a rate that would enable a solar project to be constructed. Therefore, CSOLAR submitted a proposal to IID to share the proposed towers. IID's transmission planning group felt that they needed 100% of the tower capacity at some point in the future and was therefore unable to share towers. CSOLAR designed a transmission alternative route to minimize impacts to the environment by paralleling IID's proposed transmission route so both projects could share an access road.

2.2.6.2 Interconnection to Existing Utilities

There are 5 circuits that currently run from south to north near the proposed transmission route. CSOLAR contacted each of the line owners with a request to interconnect. San Diego Gas and Electric owns towers with space for a second circuit. However, rules and regulations prohibit SDG&E from sharing towers with private developers. CSOLAR's request to utilize the existing capacity was denied. Furthermore the other transmission line owners in the vicinity were unable to accommodate this Proposed Action.

2.2.6.3 Alternative Location

In certain cases, an evaluation of an alternative location in an EIR is necessary. Section 15126(f)(A) of the CEQA Guidelines states, "Key question. The key question and first step in analysis is whether any of the significant effects of the project would be avoided or substantially lessened by putting the project in another location. Only locations that would avoid or substantially lessen any of the significant effects of the project need be considered for inclusion in the EIR."

With respect to the proposed Imperial Solar Energy Center West project, no significant, unmitigable impacts have been identified. With implementation of proposed mitigation, all significant environmental impacts will be mitigated to a level less than significant. Additionally, the proposed project would be consistent with applicable plans, such as the County's General Plan and the BLM's California Desert Conservation Area Plan.

Constructing the proposed project at an alternative location would likely result in a relocation of where the significant impacts associated with this proposed project would occur. For example, a solar field within the County's jurisdiction would likely result in the conversion of agricultural lands.

The County rejects further analysis of this alternative due to the following factors:

1. No significant, unmitigated impacts have been identified for the proposed project. Construction and operation of the proposed project at an alternative location would likely result in similar, impacts associated with the proposed project, or additional impacts that are currently not identified for the project at its currently proposed location.
2. The proposed project is consistent with the overall goals and objectives of the County's General Plan and other applicable plans.

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